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Railway Age

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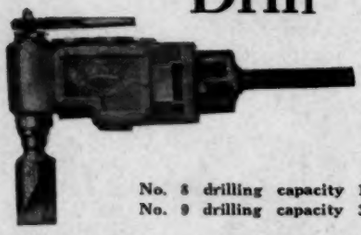

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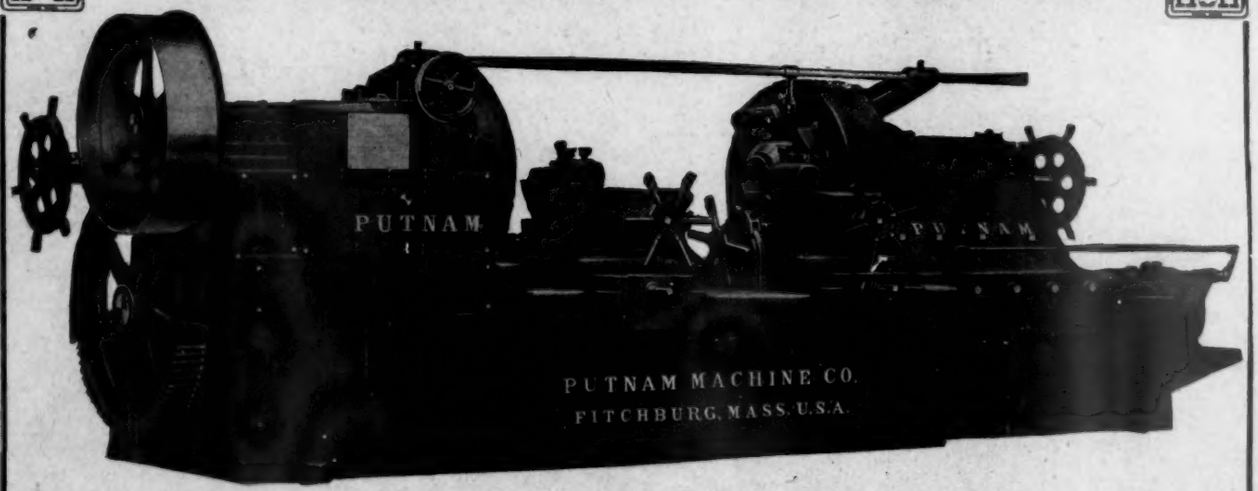

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EDITORIAL

Railway Age

The seventy-first General Assembly of Indiana has repealed the two-cent fare law. The state of Indiana is to be congratulated upon taking this step in the direction of fairness and justice in the treatment of its railroads. It is to be congratulated because it is a move which will bring stabilizing influences to the public, to commerce and to industry; because it has opened the way for other states to repeal laws inimical to progress and the growth of transportation facilities, and because it has voiced the need of constructive methods rather than a policy of restriction. The passage of this law brings to light a four-year educational campaign carried on by the passenger traffic officers of the Indiana lines together with the operating legislative committee. This campaign was presented first to the people and business interests of the state and later to the assemblies in order that an understanding might be reached as to the needs of the steam roads which were serving them. Under government control the efforts in this campaign were redoubled and success was finally attained with the repeal of the two-cent fare law. With the action of the Indiana General Assembly in taking the lead in this reform it is to be hoped that other states, which still retain arbitrary laws that fail to meet the increased costs of material and labor, will follow. However, it may be necessary for the roads in the other states which hope to follow the lead of Indiana to duplicate its educational campaign.

Indiana Repeals Fare Law

The convention of the American Railway Engineering Association which was held in Chicago two weeks ago was, in every respect, one of the most successful in the history of that organization. The indications are that the same thing will hold true of the June conventions of the Master Car Builders' and Master Mechanics' Associations. The Railroad Administration is co-operating in the preparations for the meeting and will undoubtedly follow the same course as has been done in the case of other conventions in asking federal managers to see that as many of the mechanical officers as possible attend the meetings. This will do much to insure a record-breaking registration. The secretary of the associations is already receiving the reports from the committees and the prospects are that advance copies will be in the hands of the members much earlier than in previous years. In order that the best results may be secured, the members should attend the conventions prepared to discuss the reports and papers freely, and it will be wise also to thoroughly thresh out the questions and perplexities in the minds of many as to the amalgamation of the associations. A thorough and frank discussion of these things will do much to clear the atmosphere and make it possible for the new association to function to the best possible advantage. The reports received from the Railway Supply Manufacturers' Association indicate that the exhibits will surpass those of any previous year both in number and scope. It is expected that the exhibitors will give special attention to preparing their exhibits so as to make them as effective as possible from an educational standpoint. This is particularly important since the meetings will undoubtedly be attended by a large number of mechanical department officers and foremen who have never before had that privilege, many of whom are young men who have been promoted to positions of importance since 1916.

The Mechanical Conventions

A striking illustration of the difficulty in adapting common standard locomotives to all conditions is illustrated by the experience of the Pittsburgh & Lake Erie. While this road uses fairly heavy freight locomotives it has never felt the necessity of equipping them with mechanical stokers because the line is almost level and high-grade Pittsburgh coal is used for locomotive fuel, thus making the fuel consumption comparatively light. The Railroad Administration has furnished this road with some of the heavy Mikados having a tractive effort of 60,000 lb., a weight on drivers of 240,000 lb. and a grate area of 70.8 sq. ft. Ordinarily, such locomotives would burn considerably more than 4,000 lb. of coal per hour and stokers could be used upon them to advantage. The average fuel consumption per hour for these locomotives drawing full tonnage trains (6,000 tons) is only about 2,000 lb. of coal per hour, thus bringing them well within the limits of efficient hand firing. The introduction of the stoker under these conditions cannot be justified, and, indeed, has caused a great deal of trouble in the way of delays because the men are not familiar with stoker operation, and there have been a very considerable number of stoker failures. The experience emphasizes what the *Railway Age* has consistently pointed out, and that is that in order to secure the greatest efficiency, the locomotives must be carefully designed and equipped to suit the conditions under which they are to be used.

The Standard Locomotives

It is now the season when maintenance of way and improvement work should be getting actively started. Yet it is practically at a standstill with no immediate prospect of active inauguration and with greater uncertainty regarding the volume to be done than in any recent year. Owing to the desire to make a favorable financial showing it has been the custom of some roads in the past to do the minimum amount of work until the close of the fiscal year on June 30 and then endeavor to make up for lost time later in the summer. Because of a recognition of the waste resulting from this practice, the Interstate Commerce Commission changed the fiscal year a few years ago to terminate on December 31. This gave a marked impetus to the starting of work as early as the season permitted and has been the means of effecting important economies, the nature of which is familiar to all railway men. One of the advantages which the advocates of government ownership of the roads have claimed for it has been the removal of the incentive for financial showing which has led to interference with orderly programs of work under private management. It has also been contended that the roads would be kept in repair with the sole consideration

Government Control and Maintenance Work

of their best and most economical maintenance. While it is true that recent experiences have made government ownership a dead issue insofar as this country is concerned, it is not out of place to call attention to the stagnation in the maintenance and improvement of the railway properties which now exists, at a time when there is more than the usual demand for such work to bring them up to their proper standards. Although the stagnation and delay in starting work is not the result of deliberate intent on the part of the Railroad Administration, and, in fact, is contrary to the desires of those in control and to what they know is good railroad practice, it is nevertheless the result of the system under which they are working, which makes possible the submerging of the interests of economical railway operation to those of political considerations.

A New Cycle of Railway Wages

WE ARE ENTERING a new cycle of changes, or proposed changes, in railway wages.

Less than a year ago the Railroad Wage Commission made its report recommending advances in wages to all classes of employees which it was estimated would amount to about $300,000,000 a year. There were numerous complaints that the advances made were too small. The first employees to be granted an additional advance were those in the shops, who had been given more in General Order No. 27 than the Commission had recommended. Director General McAdoo appointed a Wage Board composed of three railway officers and three officers of employees' organizations. After receiving the recommendations of this board, the director general made advances in the wages of the shop employees roughly estimated at $150,000,000 to $200,000,000 a year. This was the first of a series of advances made to special classes of employees which have amounted to $500,000,000 a year, and which, with the advances made on the recommendation of the wage commission, have made the total advances to date under government control $800,000,000 a year.

The shop employees who were granted the first special advance last year have recently presented a petition for another large advance. It is estimated that the advance now asked would amount to $150,000,000 a year. The action taken on their petition will be important in itself, but still more important as a precedent. If another advance in wages should be granted to the shop employees, of whom there are over 500,000, there would immediately be received petitions for at least proportionate advances to the other million and a half employees. If another advance should be granted to the shop employees, it is hard to see how it could be refused to other employees, since the shop employees are both absolutely and relatively among the highest paid men on the railways. To begin another cycle of advances in wages would mean further increases of hundreds of millions of dollars annually in railway expenses. It is only necessary to recall the experience of the last year to show that this statement is justified.

Are the shop employees entitled to higher wages? They base their petition on the grounds that the rates established last year are inadequate and that a further increase is needed "to meet the ever-rising cost of living and to maintain a more equitable differential between classes of railroad employees and those engaged in similar capacity in other industries." But the cost of living will continue to tend upwards rather than downward if vast advances of wages in the various industries are to continue. It may be that mechanics employed in shipbuilding are paid higher wages than railway shop employees; but practically all other mechanics are now paid less, and substantially less than those of railways; and comparison should be made with mechanics of all classes working under conditions comparable to those on railways, not merely with the one class, which, because of exceptional conditions, happens to be the highest paid.

The expenses of the railways are now out of all proportion to their earnings, in spite of the large increases in rates. The government incurred a deficit of over $110,000,000 in operating them in the months of November, December and January. It will have to advance the rates again to avoid a huge deficit in 1919 even if wages stay where they are. Every further advance in wages will mean a corresponding increase either in the deficit that the taxpayers will have to pay or in the rates that travellers and shippers will have to pay. Have railway employees, whose wages now average 45 per cent more than a year ago, a better right to still further advances than the public has to protection from the increases of taxes, or rates, or both, that further advances in wages would render necessary? That is the question really raised by the beginning of a new movement for advances in railway wages.

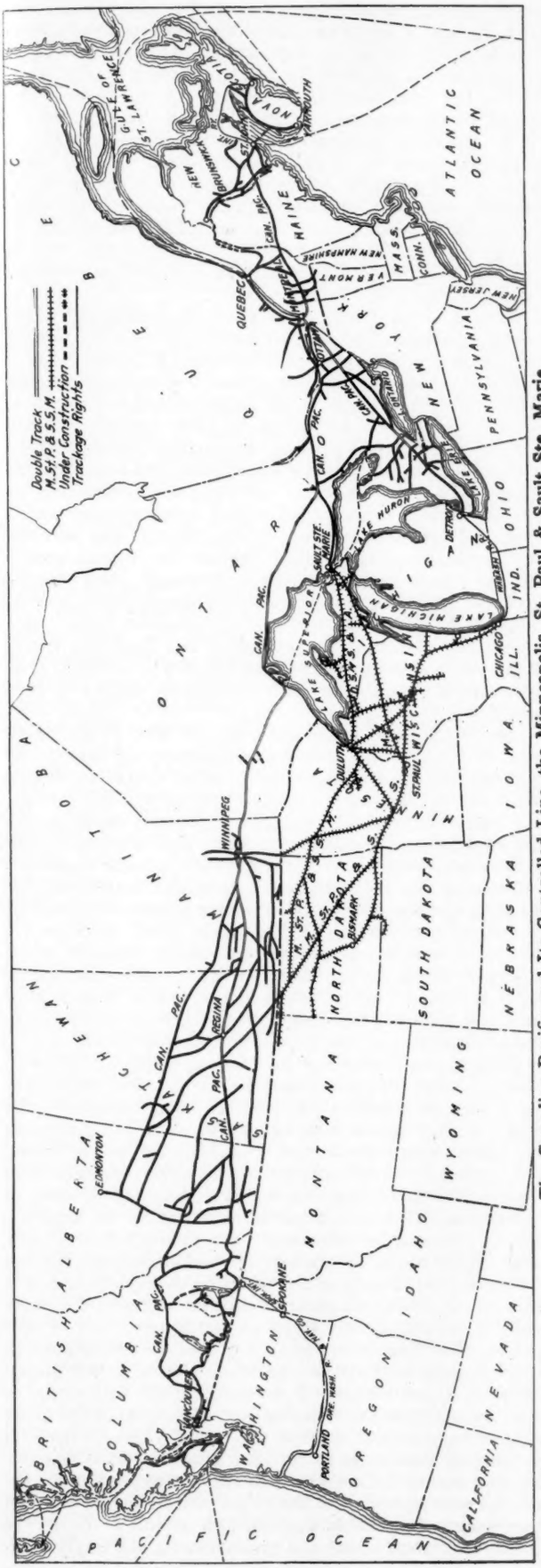
The enormous advances in wages following those made on the recommendation of the Railroad Wage Commission last year were made in such a way that the press and public were not informed, and do not know now the exact grounds upon which they were asked for and granted. The failure to give adequate publicity to these matters was not justifiable even in time of war; it would be still more unjustifiable in time of peace. The public has to pay the bill and has a right to know what and why it is asked to pay. The United States, we are occasionally reminded, is a democracy, and it is not consistent with the principles of a democracy for wage advances that will cost the public hundreds of millions to be made as advances in railway wages amounting to over a half billion dollars a year have been made within the last year.

The Railroad Administration should see that the public is informed as to exactly what the railway shop employees are asking; as to the reasons advanced for and against granting their demands; and as to the reasons for the decision finally reached by the Administration. Then the public will be able to form an intelligent opinion as to the reasonableness and justice of what is demanded and what is done; and there will be less danger that things that are neither reasonable nor just will be done.

Canadian Pacific

THEY CALL THE INCREASED railway wage scale in Canada the McAdoo scale of wages. As a matter of fact, the Canadian roads, in so far as rates and wage scales were concerned, followed the course adopted in the United States. There is one fundamental and vitally important difference, however, between the conditions in Canada as regards the Canadian Pacific and the conditions in the United States as regards the government operated railroads. The Canadian Pacific's wage scale is dependent on that of the United States Railroad Administration, but the Canadian Pacific management is free to deal effectively with labor in regard to efficiency, whereas the federal manager of each American road under the administration is nearly helpless in this respect. Thus, the Canadian Pacific may hope to reduce operating expenses, if not in full proportion to a reduction in traffic, at least in some reasonable measure.

The most striking thing about the Canadian Pacific situation to a man going there from the United States is the contrast between the way the Canadian public regards the service of the Canadian Pacific during the past year and the way the American public regards the service of the roads under the United States Railroad Administration. There is almost an entire lack of hostile criticism of the Canadian Pacific's service under war conditions. The Canadian Pacific was



The Canadian Pacific and Its Controlled Line, the Minneapolis, St. Paul & Sault Ste. Marie

called upon to perform many extraordinary services in connection with the war but the machine under the management of the private corporation officers functioned smoothly and effectively; troop movements were conducted with a minimum of discomfort either to the troops or to the traveling public. There was no such disruption of the natural flow of traffic on the Canadian Pacific as occurred in the eastern and southern parts of the United States especially and, to some extent, on most of the larger United States railroad systems.

In the calendar year, 1918, gross earnings of the Canadian Pacific amounted to $157,538,000. This compares with $152,389,000 gross in 1917, but in 1917 a total of $1,969,000 was included in this gross from the earnings of the Pacific coast steamships, the commercial telegraph and the news department, whereas in 1918 only $194,000 (the net earnings of the commercial telegraph for two months were included in gross), so that the actual increase in 1918 over 1917 was nearly $7,000,000 instead of the apparent $5,000,000. Operating expenses in 1918 amounted to $123,035,000, comparing with $105,843,000 in 1917.

The Canadian Pacific got an increase in freight rates of something less than 15 per cent in March, 1918, and the increase in July, following the adoption of the new McAdoo scale of wages, was only sufficient to bring the general freight rate structure up to the level of the increased United States rates. During nearly the entire year, the Canadian Pacific had the benefit of passenger rates which were as high as those put into effect by the United States Railroad Administration in July, 1918. Furthermore, whereas wage increases in the United States were retroactive to January 1, 1918, wage increases on the Canadian Pacific were retroactive in some cases to March, and in others were not put into effect until August.

Fixed charges on the Canadian Pacific were substantially the same in 1918 as in 1917 and after making the usual $500,000 contribution to the pension fund, there was $23,631,000 earnings from the railroad, exclusive of steamships and telegraph, available for dividends in 1918, comparing with $33,848,000 available in 1917. Special income, so-called, which includes net revenue from investments in ocean and coastal steamship lines, the commercial telegraph, interest, etc., amounted to $8,129,000 in 1918 and, in 1917, to $10,703,000. The decrease in 1918 was due entirely to smaller net earnings from ocean and coastal steamship lines. The Canadian Pacific was peculiarly fortunate in the first years of the war in the smallness of its losses of ships sunk by submarines but in 1918 it suffered rather severe losses and of the total of 15 steamers lost through enemy action or from accidents at sea during the war, a very considerable part were lost in 1918. The Canadian Pacific, however, wrote off as part of expenses of the steamship lines the present cost of replacement, so that there is no profit and loss debit which will have to be absorbed in later years. At the end of the year, the company had 28 steamers in service with a gross tonnage of 264,000 tons and six others with a gross tonnage of 80,000 tons ordered and soon to be delivered. When these vessels are delivered, the Canadian Pacific's fleet will have an aggregate tonnage somewhat larger than it had at the outbreak of the war.

The Canadian Pacific paid its regular 4 per cent on the preferred stock and 10 per cent on the common. This common dividend is paid 7 per cent from railroad earnings and 3 per cent from special income. After dividend payments, the company had a surplus from railroad earnings of $2,204,000, which has been placed in reserve to meet the requirements of the special dominion tax imposed on the Canadian Pacific. It will be remembered that the Canadian Parliament passed a law imposing a tax on the Canadian Pacific equal to all of the surplus from railroad operations above dividend requirements up to $7,000,000. After

$7,000,000 surplus had been paid as a tax, any remaining surplus was to be divided equally between the company and the Canadian government. In 1917, the Canadian Pacific had a surplus from railroad earnings above dividend requirements of $12,421,000 so that the Canadian tax in 1918 would have been, if the company had done as well in that year as in 1917, approximately $9,500,000. As it is, the government will get $2,204,000 unless some flaw is found in the law.

The Canadian Pacific has always adhered to a high standard of maintenance. This policy was pursued in 1918, and $22,646,000 was spent on maintenance of way as compared with $17,470,000 in 1917. It is an interesting fact that in figuring replacements the Canadian Pacific has scrupulously charged to expenses the full present cost of steel and other materials. Thus, if a steel bridge is replaced by a concrete structure, operating expenses are charged not with the book cost of the steel structure, less scrap value, but with the amount that it would cost today to build the steel bridge, less scrap value; on the other hand, a very conservative policy is pursued in regard to scrap value as, for instance, when rails are taken up their scrap value is figured not at the present cost of steel but at the original cost.

During all the four years of the war the Canadian Pacific has been restricted in its maintenance expenditures by a shortage of labor, but apparently in 1918 it managed to get sufficient labor to put the property in fine shape. Thus, $2,073,000 was spent for ties in 1918 as against $1,600,000 in 1917; and $1,559,000 was spent for rails as against $500,000 in 1917. Both of these are materials accounts but the unit costs of materials in Canada did not increase by any means as much as this difference between 1918 and 1917 tie and rail expenditures, so that more material was actually used and more work done in 1918 than in 1917. Track laying, a labor account, amounted to $6,840,000 in 1918 as against $5,071,000 in 1917. There is a decided contrast between the Canadian Pacific's policy toward maintenance of way in 1918 and that of most of the roads under federal control in the United States.

On the other hand, maintenance of equipment on the Canadian Pacific did not take the big jump in cost that it did on many American roads. Total maintenance of equipment expenditures in 1918 were $28,227,000 for the Canadian Pacific, comparing with $23,404,000 in 1917. The following figures which, so far as we know, have never been published heretofore, show the average cost of repairs per unit of equipment, exclusive of renewals and overhead charges.

	1918	1917
Locomotives	3,814	2,964
Freight cars	91	68
Passenger cars	1,677	1,366

In December, 1918, the Canadian Pacific had, on the lines east, 17.1 per cent of its locomotives awaiting or under repairs and on the lines west 16.8 per cent. The Canadian Pacific has no locomotives stored; this fact should be remembered when comparing percentage of equipment under repair and needing repair with the figures given out by the United States Railroad Administration since there are a large number of locomotives in the United States in storage, many of them in need of repairs.

Transportation expenses, the out-of-pocket cost of handling the business, amounted to $59,109,000 in 1918, as compared with $51,350,000 in 1917. Compare this increase of a little over 15 per cent in transportation expenses with an increase of 40 per cent in the transportation expenses of the Pennsylvania, 35 per cent of the Erie, 36 per cent of the Chicago & Northwestern, 26 per cent of the St. Paul, 28 per cent of the Atchison, Topeka & Santa Fe, and 48 per cent of the Illinois Central. A difference of from three to six months in the effective date of wage increases is hardly sufficient to account for the contrast between the increases in Canadian Pacific transportation expenses and the others which are fairly typical of the larger American roads, and some other circumstances furnish an explanation. One of these other circumstances is the more effective work which the Canadian Pacific has been able to get out of its employees under private management as compared with the work gotten out of the American railroad employees reporting nominally to federal managers but actually dealing direct on labor questions with the central administration. It is interesting to note how well the Canadian Pacific was able to hold down loss and damage and injury expenses. Loss and damage to freight cost $1,229,000 in 1918 as against $967,000 in 1917, and injuries to persons cost $405,000 in 1918 as against $458,000 in 1917.

The Canadian Pacific is a financial institution of tremendous strength. It came to the financial aid of Canada and the empire in the war and it is today a shining example of a North American railroad privately owned and operated with a credit comparable to the strongest companies engaged in other industries. At the end of 1918, the company had $39,548,000 cash on hand and had loaned $40,000,000 debenture stock to the imperial government and it bought and owned $30,682,000 imperial and dominion government securities, besides having $60,704,000 deferred payments on lands and townsites due to it. The company has no mortgage bonds except about $3,500,000 on the Algoma branch, and its 4 per cent consolidated debenture stock has no power to put the company into the hands of a receiver although its holders can take over the operation of the property if their dividends are not paid. The Canadian Pacific carries on its balance sheet a surplus of $127,275,000 from operation of the railroad and $106,724,000 surplus in other assets.

The company did not very much more than earn its dividends in 1918. If additional wage increases are made to the brotherhoods in the United States, the Canadian Pacific will have to follow suit probably with increases to its engine and trainmen. This would apparently mean an increase of about $800,000. Assume that there are some further increases in wages in the states which would necessitate further increases in Canada and assume also that the pressure of public opinion or some other reason prevents the increase of freight rates in the United States and, therefore, in Canada, is there any danger of the Canadian Pacific's failing to earn its dividends in 1919? Traffic is falling off to some extent in Canada, but not to the extent that it is on most of the larger roads in the United States, nor is the Canadian Pacific dependent, to any great extent, on coal traffic.

There is small chance of any serious surplus of labor in Canada. The 400,000 Canadian troops who volunteered and have seen service in France are being absorbed quite easily as they return without as yet, at least, displacing the women who entered such industries for which women have proved to be well adapted. The serious danger which threatened Canada from the war was being bled white of man-power. This danger has been averted by the armistice and the introduction of women into industry has actually increased the available "man-power." Furthermore, the cost of materials in Canada is decreasing fairly rapidly and on a scale which would suggest that further increases in wages could be almost entirely offset by the lowered cost of materials. The Canadian Pacific has been so conservative in its accounting methods and so liberal in its policy toward upkeep and has written off so promptly the full extent of losses due either to the increased cost of material or the direct effect of the war that it faces the future with no aftermath of financial difficulties to be taken care of. It is conceivable that a crop failure would so reduce revenues as to prevent the earning in full of the 10 per cent dividend, but even were some unforeseeable disaster such as this to occur, the company's current assets and great reserves are amply suffi-

cient to warrant the payment for a year or two years of dividends out of surplus. No such necessity, however, confronts the road at present. It stands a monument of financial strength in striking contrast to the English, French and most of the United States roads.

The following table shows the principal figures for operation in 1918 as compared with 1917:

	1918	1917
Mileage operated	13,380	13,389
Freight revenue	$110,187,288	$103,635,795
Passenger revenue	30,837,254	30,238,986
*Total operating revenue	157,537,698	152,389,334
Maintenance of way expenses	22,646,106	17,470,069
Maintenance of equipment expenses	28,226,991	23,404,263
Traffic expenses	3,011,579	3,084,944
Transportation expenses	61,047,813	53,029,260
General expenses	5,421,601	5,023,609
Taxes	2,518,727	2,129,604
Total operating expenses	123,035,310	105,843,317
Net operating income	34,502,388	46,546,018
Interest, including debenture charges	10,177,513	10,229,143
†Railroad income available for dividends	23,630,898	33,848,129
Other income	8,129,750	10,703,298
Net corporate income	31,760,648	44,551,427
Dividends	29,227,276	29,227,276
Surplus	2,533,372	15,324,151

*Including commercial telegraph and miscellaneous expenses for the whole year in 1917 and for two months only in 1918.

†The net from commercial telegraph and Atlantic steamship lines is deducted before arriving at this figure and is included in the other income in the next item.

New Books

The Earning Power of Railroads; **1918-19** *edition. Compiled and edited by Floyd W. Mundy, of James H. Oliphant & Co.,* 61 *Broadway, New York.*

In this little volume, which, although it contains 422 pages, is printed on such thin paper that it is but half an inch thick and can be slipped into a coat pocket, there is contained a simple, clear statement of the Interstate Commerce Commission's system of railroad accounting, an analysis of what constitutes earning power of a railroad and security for the holder of bonds or stocks; a set of tables for 144 railroads in the United States, Canada and Mexico, showing mileage operated, gross earnings and surplus for a series of years, capitalization, income account for 1917 and the percentage of maintenance, of other operating expenses, and of fixed charges to total income, with a statement of freight and passenger density and second-track and siding mileage; and, in addition, notes in regard to each one of these 144 roads, describing something of the characteristics and history of the road. If an investor desires to get a picture of the main characteristics of a railroad property there is probably no reference work published to which he could turn to find the information so easily and quickly as to this. It makes no pretense of being comprehensive in the sense that Poor's Manual of Railroads is, but it is admirably adapted to the needs of a man or woman who does not have the time or the knowledge to go into an exhaustive and analytical study of a particular railroad property.

The introductory chapters, describing the Interstate Commerce Commission's accounting system and commenting on railroad earning power, are especially good.

The notes in general are painstaking and intelligent commentaries on the characteristics of the property and its financial structure which should be thoroughly understood by an investor in its securities. Occasionally a bit of information is omitted that, if included, would seem to have been of value. For instance, in the notes on the Boston & Maine, while the leased lines are mentioned, there is no statement showing the proportion of mileage operated for these leased lines, although the fact that of the total 2,259 miles of road operated by the Boston & Maine 1,520 miles are leased under high guaranteed rentals, is one of the fundamentals which have shaped the history of the property; but this is an exception, and in general the notes are remarkably comprehensive, considering the space which they occupy.

Letters to the Editor

Are the Railroads Fair to the Public?

London, England.

To the Editor:

It may interest "A Thinking American," whose letter you published in your issue of January 10, to know that his statement as to lax practices on English railways in reference to season tickets no longer holds good.

Since the war season ticket holders are required to produce their tickets on all occasions just like ordinary passengers. Further, if a holder leaves his ticket behind, he is required to pay the fare (at least on short distance travel, I cannot speak as to the practice in other cases), and it is not refunded. Allowance for non-use during holidays or illness has also been restricted. As every season ticket is issued subject to these conditions, there is surely no question of the railway company "taking advantage of the passenger on technicalities."

I cannot think that the statement of the "head of one of the great English railroad systems," to the effect that frauds were unimportant, would be generally accepted in the English railway world. So far from spending $500,000 a year to detect $50,000 worth of fraud, one company with whose affairs I am acquainted, in addition to prosecuting to convict many scores of exceptionally bad cases per annum in the police courts, recovers in excess payments from passengers who are not prosecuted enough to pay the wages of the whole force of traveling inspectors employed.

W. M. Acworth.

Value of a Personnel Department

St. Louis, Mo.

To the Editor:

I was very much interested in an article appearing in your February 14 issue, in regard to the necessity for railroads having a personnel department. Two or three years ago I addressed a letter to several railroad executives, presenting to them the desirability of a department of this kind, but was unable to secure any satisfactory replies, all seeming to think that such a department was a development of the future, with the single exception of the president of one company, who was interested, but not sufficiently so to go forward with the proposition.

My suggestion was that a department be formed to canvass all employees, find out their ages, size of families, when they entered the service, at what salary they started, what promotions they had, education, special training, etc. Then add similar information regarding new employees entering the service. All of this information was to be placed on a regular service card, together with notations regarding habits, personalities, physical and mental qualifications or disqualifications, etc., and was to be used as a basis not only for a study of the possibilities for increasing efficiency in the personal element, but was to be used in filling vacancies at various points on the line, especially in the line of promotions. In other words, to cite an example, if Bill Smith was holding down a revising desk at a local freight office, and his record showed him to be a man worthy of promotion, when a vacancy occurred at a larger station, or in the general office, the management would be in a position to tell from the card record whether his family affairs, together with his personal habits, would render it desirable to promote him to the vacancy.

Another feature I had in mind was to use such a department as a sort of educational clearing house to assist ambitious employees to better their condition, by investigating various mail and personal training schools, so that the department would be in position to tell any ambitious young man or woman where training along a certain line would be best secured, and at what cost, under what circumstances, etc.

Another thought was to use the department to prepare articles that could be presented to high schools, colleges and other educational institutions, presenting the matter of transportation in its more elemental phases, and possibly bringing about an increased understanding and appreciation of the necessity for transportation, and its relation to every phase of human endeavor. In connection with this feature, I had thought of attempting to bring to the attention of young men in the high schools, colleges, etc., the wonderful opportunity afforded by the transportation field, for those well equipped to enter it, and thus endeavor to bring about an increased desire on the part of the brighter young men to enter this field.

It seems to me that a department of this kind, properly conducted, would go far toward bringing about a better feeling between the public and the carriers, and of equal importance, it would bring about a better feeling between the companies and the employees, because in the practical working out of the idea every employee would come to realize that the matter of promotion had become one of merit, rather than personal influence.

T. ERSON.

The Question of Safety

CHICAGO, Ill.

TO THE EDITOR:

Much has been said lately concerning the safety of the railroads, both material and personal, under government operation. No less than the Hon. James Hamilton Lewis, senator from Illinois, stated not long ago that "we see now no railroad collisions and deaths of passengers and crews." Nevertheless there have appeared from time to time newspaper reports of wrecks which somehow seldom failed to contain a fair-sized casualty list. The divergence between the opinion of certain advocates of government control of the railroads and the opinions one forms from periodicals and newspapers, led me to compile the following statement of accidents, comparing the year 1918, when the roads were under government operation, with 1917, when the roads were privately operated. My only source of information in compiling this was the statement of wrecks which appears monthly in the *Railway Age*. I realize that this statement is not entirely complete, but since the records for both years were obtained from the same source, I believe it is representative of the true relations of the accident and casualty list for the two years.

I do not believe that any explanation of these figures is necessary other than the qualification already stated.

—OBSERVER.

Inspectors of Locomotives, at $3,000 a year, are called for by the United States Civil Service Commission and examinations will be held on May 21 and 22 to fill vacancies under the Interstate Commerce Commission. Applicants must have reached their 25th but not their 55th birthday on the date of the examination, and must have not less than three years' railroad experience in the capacity of master mechanic, road foreman of engines, locomotive boiler maker, locomotive boiler inspector, roundhouse foreman, shop foreman, locomotive machinist, or locomotive engineer; not less than five years as locomotive inspector or locomotive fireman; and must have been within three years next preceding the date of application in active service in any such capacity or in the capacity of inspector of locomotive equipment under the government of the United States or of a state or territory.

	Butting collisions						Rear collisions						Other collisions					
	1917			1918			1917			1918			1917			1918		
	Number	Number killed	Number injured	Number	Number killed	Number injured	Number	Number killed	Number injured	Number	Number killed	Number injured	Number	Number killed	Number injured	Number	Number killed	Number injured
January	3	2	6	2	7	5	4	6	24	4	3	16	1	0	49	5	11	33
February	2	0	3	2	1	20	3	20	10	6	24	64	1	0	0	1	1	4
March	0	0	0	2	2	3	1	3	0	1	1	2	1	3	6	1	2	0
April	1	0	14	3	7	12	0	0	0	2	5	5	1	2	1	0	0	0
May	1	3	0	2	2	4	4	6	9	3	2	29	1	2	0	0	0	0
June	5	8	32	3	15	23	1	1	0	2	81	129	1	1	1	0	0	0
July	2	2	9	1	92	88	3	0	5	1	1	49	3	2	9	1	1	2
August	7	14	26	1	1	3	1	2	11	2	5	0	4	5	3	0	0	0
September	6	35	158	3	24	73	2	7	12	1	3	16	3	0	17	0	0	0
October	2	2	10	1	3	2	2	5	43	2	3	4	2	3	2	1	0	17
November	1	1	4	2	8	16	1	3	16	0	0	0	1	0	6	0	0	0
December	3	11	22	2	3	23	5	52	43	1	5	23	3	7	5	1	0	1
Total	33	78	284	24	165	272	27	105	173	25	133	337	22	25	99	10	15	57
1918—Increase	..	..	..	..	87	..	..	..	..	..	28	164	..	..	..	..	..	..
1918—Decrease	..	..	..	9	..	12	..	..	..	2	..	..	..	..	..	12	10	42
Per cent	..	..	..	27	111	4	..	..	..	7½	27	95	..	..	..	55	40	42

	Miscellaneous accidents, derailments, explosions, etc.						Total					
	1917			1918			1917			1918		
	Number	Number killed	Number injured	Number	Number killed	Number injured	Number	Number killed	Number injured	Number	Number killed	Number injured
January	13	11	83	15	30	117	21	19	162	26	51	171
February	20	21	175	9	7	23	26	41	188	18	33	111
March	10	6	36	9	13	33	12	12	42	13	18	38
April	7	4	12	12	7	112	9	6	27	17	19	129
May	8	2	27	10	26	128	14	13	36	15	30	161
June	11	8	48	11	5	188	18	18	81	16	101	340
July	10	6	79	8	13	62	18	10	102	11	107	201
August	10	13	40	7	8	74	22	34	80	10	14	77
September	14	13	53	5	12	9	25	55	240	9	39	98
October	12	7	78	1	4	0	18	17	133	5	10	23
November	5	2	7	7	9	122	8	6	33	9	17	138
December	13	9	135	8	9	119	24	79	205	12	17	166
Total	133	102	773	102	143	987	215	310	1,329	161	456	1,653
1918—Increase	..	..	..	..	41	214	..	..	..	..	146	324
1918—Decrease	..	..	..	31	..	..	..	..	..	54	..	..
Per cent	..	..	..	23	40	28	..	..	..	25	47	24

Railway Buying and Industrial Readjustment*

The Barometers of General Business and Equipment Purchases Show an Interesting Relationship

By E. B. Leigh
President of the Chicago Railway Equipment Company, Chicago

EMPLOYMENT OF LABOR during the transition from war to peace is complicated by the fact that the government itself, through the Railroad Administration, has greatly reduced its purchases of equipment, material and supplies. The director general has proposed estimates for 1919, which the House Committee on Appropriations has approved. Apparently the sums named would provide additions and betterments in quantity much less than the actual provision in recent years. Indeed, Mr. Hines has stated that no large program of capital improvements could be expected, unless Congress grants the five-year extension.

As a result of meagre purchases since the armistice was declared, unemployment has already manifested itself in the railway supply industries, while new orders are abnormally low. This in due course will increase the prevalence of short time and shutdowns in these industries.

Soldiers coming home are greeted with posters on every fence urging employers to give them jobs. These are proclamations by the United States government. Yet the government itself, through the Railroad Administration, is withholding the orders upon which employment for soldiers and others depends. It is being urged upon the director general and upon Congress that the railways under governmental control should have at least a normal program of additions and betterments.

A representative of the Railroad Administration, we are told, is to be a member of the new government price conference board, the function of which is to determine prices at which the government departments, including the railways, will enter the market.

In this situation it seems of highest consequence that those in authority at Washington should be aided in grasping the relation between railway purchases and the employment of labor, in general industry and trade. For many years past I have observed the effect of railway purchases upon general business prosperity—induced by the fact that in my business (a portion of which is that of railway supplies) I had noted that when the railways of the country entered the field of substantial capital purchases, there invariably followed a period of general business prosperity; and, likewise, the cessation of such purchases was invariably followed by a decline in general business.

In 1913, and with data carefully collected from the year 1904 to that time, I set to work to test out this principle.

Rolling Stock the Index

As the iron and steel industry has long been recognized as being the truest index of general business conditions, and as prior to 1914 it was reliably estimated that the railways consumed, directly and indirectly, between 40 per cent and 50 per cent of the iron and steel production of the country, it is manifest that the expansion or restriction of railway consumption must vitally affect this barometer.

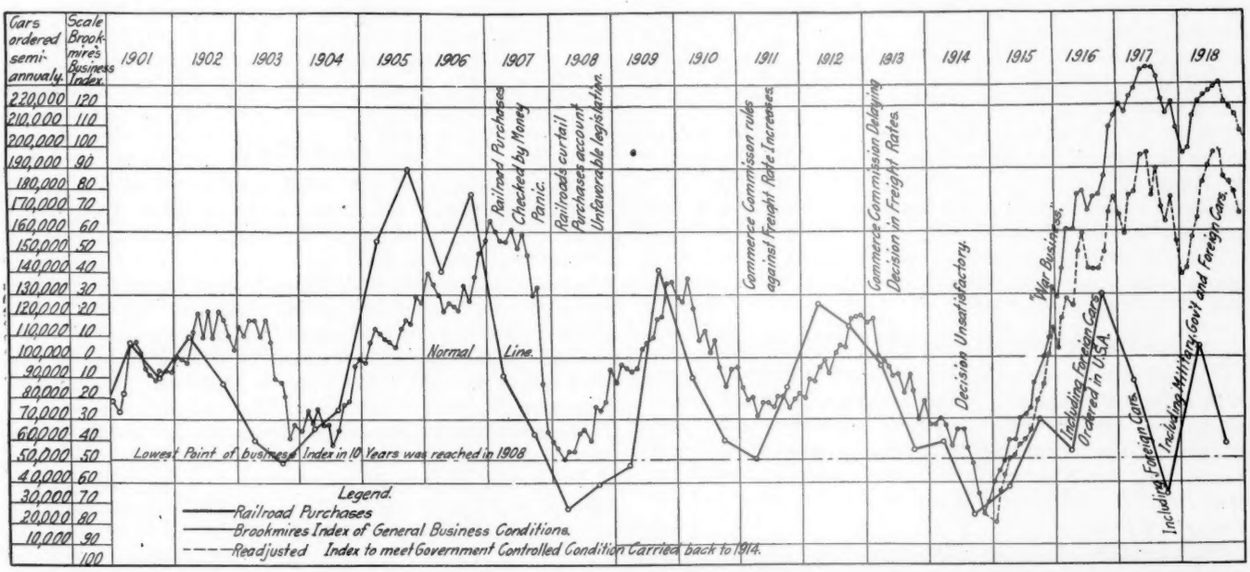


Chart Showing Relation of Railway Purchases to General Business Conditions

The ramifications of railway purchases make it impossible to classify them in the aggregate. But few of the more important items, such as rails, for example, are made the subject of public information and statistical compilation. However, the conditions under which rail purchases are made are not believed to be such as to reflect the railways' prosperity, their purchasing ability in a broad sense, or their influence upon general business.

Many years of observation led to the belief that of those items officially compiled, tabulated and made public, perhaps no one so clearly and typically reflects the railways'

*Abstract of an address delivered February 20, 1919, before the National Industrial Conference Board.

general purchasing ability as that of new equipment, and no other tabulation has been as regularly and accurately kept. When the railways bought freely of new equipment, they were generally likewise buying freely of all other articles essential to maintenance, operation and betterment. During the past 10 or 15 years the purchasing of new equipment had a greater influence upon the iron and steel industry because of the transition from wooden to steel construction.

Accordingly, the number of freight cars built each year taken as a unit and termed "railway purchases," was projected on the chart of the Brookmire Economic Service for the period of 1904 to October, 1914, inclusive—and later, as shown on the accompanying chart, brought up to date, and extended back to the year 1901.

The general business line is shown in monthly periods, while the railway purchase line is given in six-month periods.

Prior to 1907 railway purchases were influenced by and preceded under normal conditions. In this earlier period one of the important factors influencing advanced car orders and the business outlook was the "crop prospects." In the days of the so-called "granger" roads the crop prospects of Iowa, Kansas, Nebraska and the Northwest almost determined the market prices of these "granger" stocks. Necessary betterments and new equipment were determined in the light of money conditions, and the probable needs of the roads.

The period preceding 1907 was one of increasing net income for the railways. Their revenue keeping pace with expenses, it was the custom of railway managers generally to discount future requirements in ordering equipment, and they felt they could with prudence count upon resources warranting these large operations. The chart shows that car orders reached a maximum in 1905 and 1906.

But in 1908 a new condition or factor appeared, due to the investment of the rate-making power in the hands of the Interstate Commerce Commission—the beginning of a regulation which had in it no element of responsibility for transportation development. Thus, for the first time were "railway purchases" controlled by abnormal rather than normal conditions; and have so continued, more or less, from 1908 to the present time.

Three Elements for Good Business

The year 1908 was notably the leanest of business years up to 1914, notwithstanding bumper crops, plentiful money and absence of disturbed political conditions—the three recognized elements making for good business. It likewise recorded the smallest number of cars ordered during the period, 62,999, and the minimum of railway purchases for many years prior.

The conditions of 1908 were continued well into 1909, but the last half of the year witnessed a substantial buying movement by the railways, the total cars ordered for the year aggregating 193,874, nearly 70 per cent of which, however, were ordered within the last four months, with particularly heavy orders in November and December. This gave a fairly good business year, with a heavy "carry over" to 1910.

In 1910 general business promptly followed, and with the heavy "carry over" business from 1909 referred to, coupled with fairly good buying on the part of the railways during the first six months, made the year 1910 a still better year than 1909, although the total of car purchases was only 145,085. The falling off in car orders after the middle of the year was duly reflected in the decline of business until at the end of 1910 the probabilities of 1911 were clearly foreshadowed.

In 1911 the decline in general business, together with the falling off of railway purchases, continued throughout almost the entire year, but at its close a buying movement on the part of the railways set in. The total number of cars ordered for the year was 135,740, nearly 30 per cent of which were placed at the very end of the year, and necessarily carried forward into 1912.

A Complete Test

We reached a high point in railway purchases about May, 1912, continuing with normal purchases for most of the remainder of the year, again reaching a high point at the very end of the last quarter, the total car purchases being 238,400, the largest number in any year since 1906. It is here significant to note that the foregoing conditions in railway purchases were followed by a phenomenal revival of general business during the last half of 1912; this too in the face of a national election fraught with more uncertainties as to its outcome than any we had had for years. Business seemed to ignore these conditions, however, while the heavy purchases made by the railways filled the steel mills of the country with orders toward the close of the year, so overtaxing their capacity as to compel buyers to anticipate deliveries by orders placed four, six and even nine months in advance of shipping dates—a condition theretofore unprecedented, while general business assumed almost the aspect of a boom.

At this point it may be interesting and illuminating to note a comparison of conditions prevailing in 1908 and 1912:

In 1912 we had only normal reserves, normal crops and very disturbed political conditions—on the other hand, notwithstanding these unfavorable conditions, we had an almost boom year, with the railways buying heavily.

Just why was "1912" the exceptional year? Why were the political conditions and political policies almost ignored? If there had been any doubt as to the basic factor of railway purchases, it was brought into bold relief in 1912, and that year furnishes an answer.

Repression

Heavy purchases of new equipment continued during the first three months of 1913, but sharply declined at the beginning of the second half of the year—almost immediately sinking to a very low level.

It was here that the "danger signal" was set by this barometer; but, naturally, general business did not immediately feel this falling off of railway purchases at the time (because of the accumulations), being sustained by the unfilled orders or what might properly be termed the "unspent momentum."

The condition clearly foreshadowed at the middle of the year eventuated, and brought to us the memorable depression of 1914, and when railway purchases reached their lowest mark.

War

It was stated in 1913 that it was believed railway purchases were and would continue to be the controlling factor in general business until or unless some other great purchasing power developed or came to take their place.

Then the unexpected happened; the great European war broke out, resulting in war buying supplanting railway buying. It was not until well within 1915 that the effect of foreign, munition and warwork orders was substantially felt by us; but the chart shows a gradual yet steady climb of the business line during the first six months, somewhat accelerated throughout the last half of the year, and not measurably accounted for by railway purchases.

In 1916 we find the phenomenon of steadily advancing general business with declining railway purchases during the first six months, although railway purchases were greatly augmented during the last half of that year, aided by the foreign cars bought in this country.

Up to 1913 the highest point of possible record of the business index shown on the chart was 100. This, you will

see, was pierced by the business line in 1916, and when a "Mansard" was built on, up to 130. Even this had not sufficed to record the business line of 1917 and 1918.

Further Proof

The years 1917 and 1918 are interesting; and, with 1916, would seem to more surely confirm the doctrine stated. The greater part of the railway buying—particularly during 1918—has been that of the United States government order for 100,000 cars placed in April last, and the United States military railway cars, and the cars for the French, Italian and Russian governments.

In August, 1918, Brookmire readjusted his barometer index owing to the government control of prices of a number of basic or fundamental commodities, and then he carried this readjustment back to the year 1914. This I have shown in the open spaced lines; but for the purposes of uniformity and comparison, have continued the business index in the solid line, as shown.

One of the most natural questions, and one frequently raised, has been: "Is it cause or is it effect?" That is to say, in times of depression do railway capital purchases precede and initiate an upward trend to general business, or on the other hand must business prosperity precede to initiate railway capital buying?

There is one point on which there can be no question—that is: that munition and war orders were the cause of the revival of business after the great depression of 1914, as they likewise were the great sustaining factor during 1916, 1917 and 1918. War buying simply supplanted railway buying.

However, whether you are, or are not, convinced that railway capital purchases habitually precede or initiate general business activity, there is something in which you will have no difficulty in concurring, and that is this—that once the country enters upon a period of general business depression, however caused, such condition is aggravated and protracted by the absence of railway buying; and that once general business activity is resumed, no matter through what stimulus, the presence of railway buying is a major factor in sustaining and prolonging such activity.

This appears to be evidenced even in the lines of 1917 and 1918, where it is noted that the force and effect of railway capital purchases are reflected in a continuing trend in their relation to general business—although naturally, and because of the extraordinary conditions, in a considerably reduced degree.

Even the upheaval of the war has failed to obscure the principle of the doctrine; while on the other hand its manifest presence in this situation seems only to further emphasize its soundness.

The railway system of the United States is the greatest in the world—our own largest industry excepting agriculture. Our iron and steel industries have been developed to meet the railways' enormous requirements, and hence the railways have constituted the one industry whose purchases are upon such a scale as necessarily to affect the great barometer of iron and steel.

Buying is contagious; and particularly is this true of initial buying which, when upon a large scale, stimulates still greater buying and in the many directions of its influence, thus inspiring confidence—one of the most essential of the underlying factors of high and sustained prosperity.

Capital and Operating Purchases

Strange to say, railway men themselves have been those least willing to believe that railway purchasing is the "cause" of increased business activity. Their view is, that it is increase of traffic which stimulates their railway buying and that, accordingly, buying follows traffic.

This arises from their failure to discriminate between "capital" and "operating" buying. It is undoubtedly true that operating buying is, and very logically, the result of traffic conditions and traffic needs.

Capital buying, however, is of another character; it generally precedes operating buying, and is by no means entirely controlled by the then existing traffic demands. Cars cannot be obtained in a day: they must be anticipated, and contracted for long in advance of probable or possible delivery.

In periods of depression and when prices were low, car buying has been inaugurated by the larger and more far-seeing roads; and when on a considerable scale, it has almost at once prompted other roads to do likewise, thus giving initial momentum to a general buying movement.

Pulse of General Business

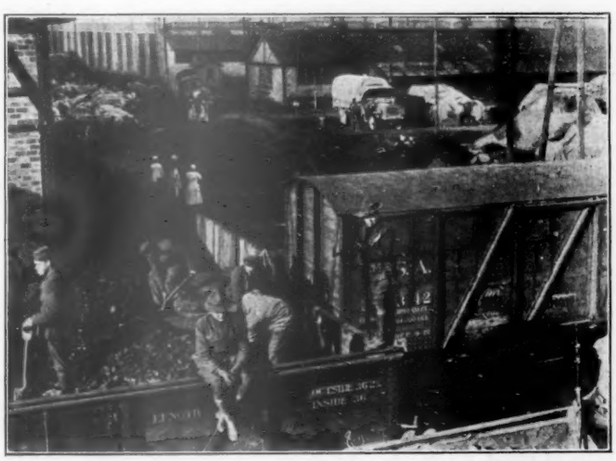
If the iron and steel industry, heretofore broadly recognized as the great barometer of general business conditions, and as basic to them, is dependent upon "railway purchases" to the extent of the absorption of 40 to 50 per cent of its production, how much more really basic are "railway purchases" as the initial force in starting and sustaining the circulation of general business? Are they not manifestly the pulse of general business?

Had I the time I might trace for you, in graphic form, the flow of this controlling current. Issuing forth from the railways, it proceeds first to the great car-building plants; thence on to the iron and steel plants and to the very large number of railway supply industries. By the latter it is again directed toward the iron and steel and other industries—thence in turn influencing a highly increased number of other and contributory industries, until this influence has reached or set in motion the entire industrial machinery—while at every turn and in every direction it has furnished employment to labor.

Thus, labor as a matter of fact is more directly and vitally concerned in this great problem than any other single element.

Increased Industrial Capacity

At the present time we have an interesting problem due to the greatly increased capacity of our iron and steel industry. Just what proportion of this increased capacity can or will be taken up by the railways is yet to be determined. Exports may take up this excess, or, if the hope of many people can be realized, they may, like war work, become the element that will sustain, if not control, the business situation.



German Prisoners Working at the Salvage Depot, Tours, France

Distribution of Railroad Security Holdings

THE NUMBER OF STOCKHOLDERS for 572 Class I railroads and their non-operating subsidiaries was on December 31, 1917, 627,930, and the aggregate number of shares was 97,475,776, according to a report compiled by the Bureau of Statistics of the Interstate Commerce Commission. The number of shares held by the 20 largest holders in each road, aggregating 8,301 names of persons, estates, corporations or partnerships, was 50,873,322, or a little more than one-half of the total. This means that 1.3 per cent of the number of stockholders in railroads of this country hold about one-half of the number of shares of stock. The subdivision of the holdings of the 8,301 stockholders is shown in the following statement:

Classification of 8,301 Largest Stockholders	Number of shares	Per cent
1. Individual females	1,082,868	2.1
2. Estates	1,333,961	2.6
3. Other railway companies	24,638,407	48.4
4. Other corporations or partnerships	11,565,838	22.7
5. Individual males	6,945,205	13.7
6. Voting trustees	5,307,043	10.4
Total shares held by 8,301 largest security holders, reported as 20 largest on each road	50,873,322	100.0

The number of holders counted under Item 1 in the table is 958, and under Item 2, 1,092.

The annual reports of steam roads to the commission give the number of stockholders and the names of the 20 largest stockholders, or holders of other securities where these have voting rights. The figures have been compiled from these returns for all Class I roads and their non-operating subsidiaries which filed reports for the calendar year 1917. These two classes of roads have about 97 per cent of the stockholders of all steam roads.

"What the distribution is among the stockholders below the 20 largest we cannot say," the report says. "The average holding of the 619,629 remaining stockholders on the basis of the preceding facts was 75 shares. It is obvious that if the roads are regarded as one system, the inter-railway holdings being disregarded, the proportion of the stock not held by railways in the hands of so small a percentage of stockholders would be considerably less than one-half. However, an exact statement could be made only after the holding of stock by the same individual in more than one railroad had been considered.

"There are great variations among the individual roads in the extent of distribution of their stock. The following statement is illustrative:

Name of road	Total number of stockholders	Per cent of shares held by 20 largest holders
Pennsylvania	100,038	8.9
New York Central	27,062	25.1
Baltimore & Ohio	29,360	17.4
New York, New Haven & Hartford	25,249	15.3
Pennsylvania Company	17	100.0
Erie	9,571	19.7
Philadelphia & Reading	13	100.0
Lehigh Valley	12,325	18.1
Southern	9,564	38.7
Illinois Central	10,783	41.6
Southern Pacific	37,853	23.0
Atchison, Topeka & Santa Fe	44,561	14.3
Chicago, Milwaukee & St. Paul	20,549	18.5
Chicago & North Western	12,770	20.9
Chicago, Burlington & Quincy	326	99.5
Great Northern	26,716	18.5
Northern Pacific	25,780	19.8
Union Pacific	33,875	17.8

"The Erie; Philadelphia & Reading; Wabash; Southern; Chicago, Milwaukee & St. Paul; Great Northern; Northern Pacific; Chicago, Rock Island & Pacific, and Union Pacific are cases in which the holdings of corporations or partnerships other than railways are more important than the holdings of other railways. Thus, of the Wabash stock, 46,642 shares were held in Amsterdam, Holland, and 36,321 were held by 14 New York and 1 Boston companies or partnerships. Of the stock of the Chicago, Milwaukee & St. Paul, 216,528 shares were held by 11 New York concerns. The Philadelphia & Reading stock is all held by or for the Reading Company. That of the Virginian is largely held by The Tidewater Company. The stock of the Bessemer & Lake Erie is held for the United States Steel Corporation.

"Among the cases in which a part of the stock is in the hands of voting trustees are the following: Pere Marquette; Chicago & Eastern Illinois; Chicago, Terre Haute & Southeastern; Cincinnati, Indianapolis & Western; Buffalo & Susquehanna; Southern Railway; Mobile & Ohio; Gulf, Mobile & Northern; Atchison, Topeka & Santa Fe; Missouri Pacific; Saint Louis-San Francisco; Chicago Great Western; Missouri, Kansas & Texas Railway of Texas; Los Angeles and Salt Lake; Midland Valley; Chicago, Peoria & Saint Louis; Denver & Salt Lake; Missouri, Oklahoma & Gulf; New Orleans, Texas & Mexico; Missouri & North Arkansas.

"The preceding figures are subject to certain limitations. As above indicated, they take no account of the fact that one person may be a stockholder in more than one railroad. The individuals named as stockholders may represent other corporations, although that fact may not be a matter of record in the books of the reporting carrier.

"The names of large bondholders are not given in the annual reports of carriers. The following figures as to the holdings of banks and life insurance companies are of interest. The figures regarding bank holdings are from the annual report of the comptroller of the currency and refer to 1917 conditions:

	Investment in railroad bonds
State banks	$1,626,298
Mutual savings banks	406,272,169
Stock savings banks	2,663,188
Loan and trust companies	33,753,533

"To obtain an approximation of the railroad bonds owned by life insurance companies, a compilation has been made of the par value of the railroad bonds shown in the assets of the life insurance companies reporting to the superintendent of insurance of the state of New York, as shown in his report for 1918. The aggregate is $1,681,242,371. The New York Life heads the list with $337,885,211. The Mutual Life has $304,498,457, the Equitable $222,696,748 and the Metropolitan $210,875,682.

"Thus, savings banks and life insurance companies have over two billions of railroad bonds. A further $2,135,086,517 was held by other railroad companies on December 31, 1916. The bonds actually outstanding on December 31, 1916, amounted to $11,202,607,096."

In an attached table details are given for each of the large railroads included in the tabulation of stockholders. The information is taken from page 109 in the annual reports of the railroads to the Interstate Commerce Commission for the year ending December 31, 1917. The distinction between males and females is not required in the report, but was made in the tabulation from the given name.

William D. Carroll, signal supervisor, and Joseph Christian, maintainer, employees of the Baltimore & Ohio, were charged with manslaughter by a coroner's jury at Pittsburgh, Pa., on March 27, and were committed to jail without option of bail. These men were held responsible for a train wreck at Laughlin Junction, near Pittsburgh, on February 22, when ten persons were killed. They were in charge of, or connected with, the repairing of a switch where a freight car had been derailed some hours before. While the repair work was going on and while the track was insecure a locomotive came along and was derailed and fell against a passing passenger train, wrecking passenger cars. Reports indicate that the light locomotive had passed an automatic signal set against it; also that it had been flagged in sufficient time to allow it to be stopped before running upon the insecure track.

A Possible Solution of the Railroad Problem

Weak and Strong Roads Combined End to End So as to Increase Competition and Greatly Strengthen All Railroad Credit

By F. J. Lisman

PART II

THE EIGHT MAPS show the possible combinations of railroad systems, and are, of course, tentative, merely indicating the possibilities of combining strong and weak systems, so that the strong will easily be able to carry the weak. These combinations, however, are not only worked out from a point of view of credit, but traffic relations, geography, etc., have also been taken into consideration.

The Central System

Map No. 1, called the Central system, shows the combination of the strong New York Central and Northern Pacific systems, each with about $250,000,000 of capital stock, on which substantial dividends are earned and paid. The Rock Island system supplements these lines to the west and southwest and with its present fixed charges could hardly be called a burden. The Denver & Rio Grande and Western Pacific are the legitimate extensions of this system to the west to the Pacific coast and the present fixed charges of these companies are not an overburden, though their credit is poor.

Connecting with the Rock Island lines to the southwest there is added the El Paso & Southwestern, a strong company which takes the system to the borders of Mexico and also might form a new line to southern California in connection with the San Diego & Eastern, now in course of construction.

In southern Texas there is added to this system, the New Orleans, Texas & Mexico, which will furnish long haul vegetable and other tonnage, and will get a large Mexican tonnage whenever Mexico is rehabilitated. This line connects with the Louisiana division of the Rock Island and would give the system a line into New Orleans from the west and also give lumber tonnage to the Rock Island lines in Arkansas and Oklahoma.

By adding the Mobile & Ohio to the system, a large lumber tonnage is provided for the Illinois and Indiana lines forming a through route to the Gulf from Chicago to Mobile and New Orleans, and also a line from the northwest to the Gulf.

By adding the Virginian to the system, access is had by the New York Central system to Hampton Roads for the grain traffic and to a coal field producing the highest quality of coal. This coal would be hauled not only to the Lakes at Toledo, but also to Chicago and points beyond.

The Chicago, Peoria & St. Louis is added to this system, because the Rock Island is weak in coal resources and the mines along the Chicago, Peoria & St. Louis are naturally tributary to the Rock Island system.

The Lake Erie & Western is left out of this system, although at present controlled by the New York Central.

The Northern System

Map No. 2, the Northern system, might almost be called the Hill system. Its backbone is the Great Northern with $250,000,000 of capital stock, paying 7 per cent dividends and earning more, and the Chicago, Burlington & Quincy, with $110,000,000 capital stock, paying 8 per cent and earning more. To these roads is added the Erie, in which the late James J. Hill was at one time interested.

The Shawmut road is added to the Erie in order to strengthen its hold on the bituminous traffic for the East. With short running rights from the southern end of the Shawmut for about thirty miles from Freeport the system would have access to the city of Pittsburgh.

The Hocking Valley would strengthen the Erie's coal traffic for Chicago and points beyond.

The Ann Arbor, together with the Green Bay & Western, makes a trans-lake line for coal and other commodities from Toledo practically straight to St. Paul.

The Toledo, St. Louis & Western forms a direct connection for the Erie to St. Louis and the Southwest.

The Kansas City Southern furnishes a through route for the Chicago, Burlington & Quincy's grain to the Gulf and furnishes lumber northbound.

By adding the Louisiana Railway & Navigation to the Kansas City Southern, an entrance for the system is secured into New Orleans, making an excellent Kansas City-New Orleans line. The Louisiana Railway & Navigation is also added to this road in order to strengthen its hold on the lumber situation.

The Midland System

Map No. 3, called the Midland system, has as its backbone the Illinois Central, with $110,000,000 of stock, on which 6 per cent is being paid and more earned and the Lehigh Valley with $60,000,000 of stock, on which 10 per cent is being paid.

The Nickel Plate is the logical connection of the Lehigh Valley between Buffalo and Chicago, and forms an excellent New York-Chicago line.

By adding to this system the Lake Erie & Western, out of the New York Central system, it secures an entrance into Indianapolis and also in connection with the Illinois Central lines a fairly good line from eastern points to St. Louis.

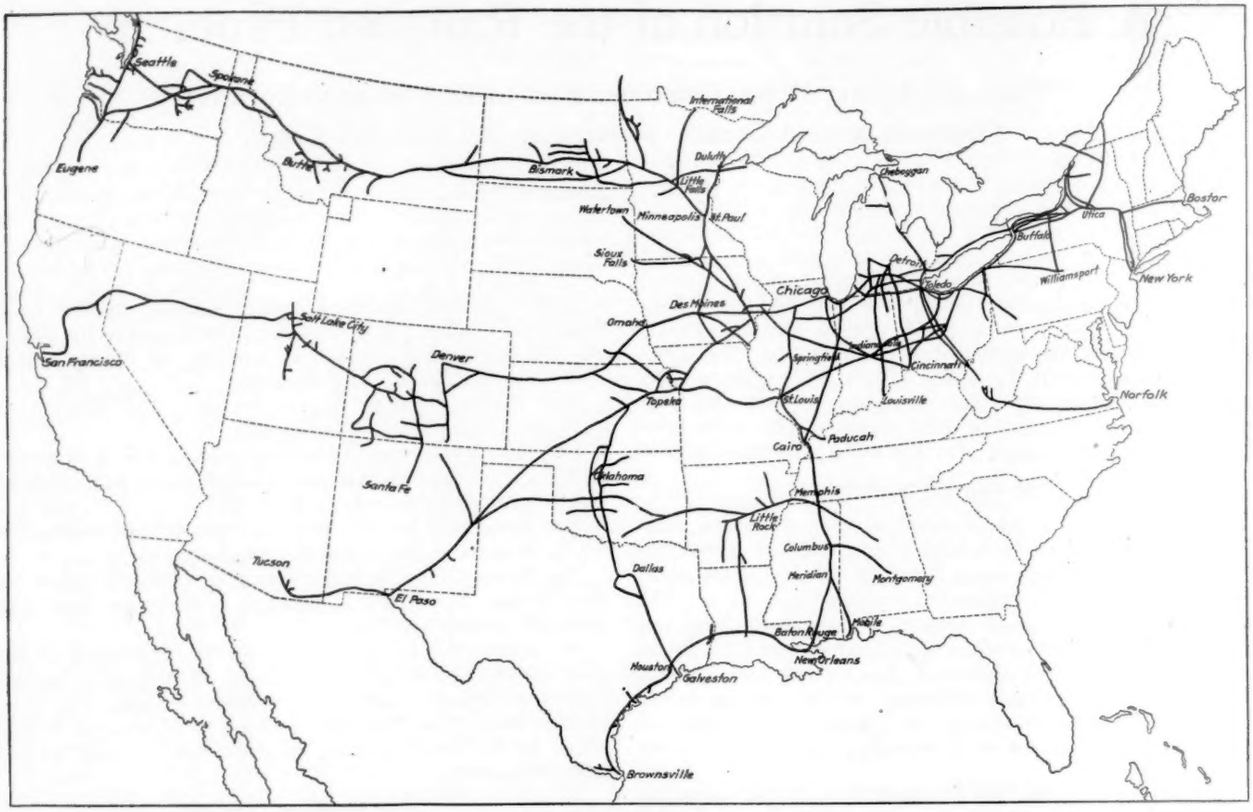
The Minneapolis & St. Louis forms the logical extension of the Illinois Central lines to the northwest and makes a fairly good line from Chicago to the Twin Cities.

By adding the Chesapeake & Ohio lines the old Newport News and Mississippi Valley route of C. P. Huntington would be realized. The Chesapeake & Ohio would feed heavy coal tonnage to the Lake Erie & Western and the Illinois Central lines and will in return take grain to Hampton Roads.

The Chesapeake & Ohio in connection with the Carolina, Clinchfield & Ohio and the Seaboard Air Line makes an excellent through line from Chicago and all points in the Middle states to the Southeast and whenever the Illinois Central builds its long contemplated line from Birmingham to Jackson, Miss., through the Pearl River valley, a New York-New Orleans through line is created in competition with the present line over the Atlanta & West Point and the Louisville & Nashville roads. This combination also makes a direct line from St. Louis, Mo., to Savannah, Ga., and Jacksonville, Fla.

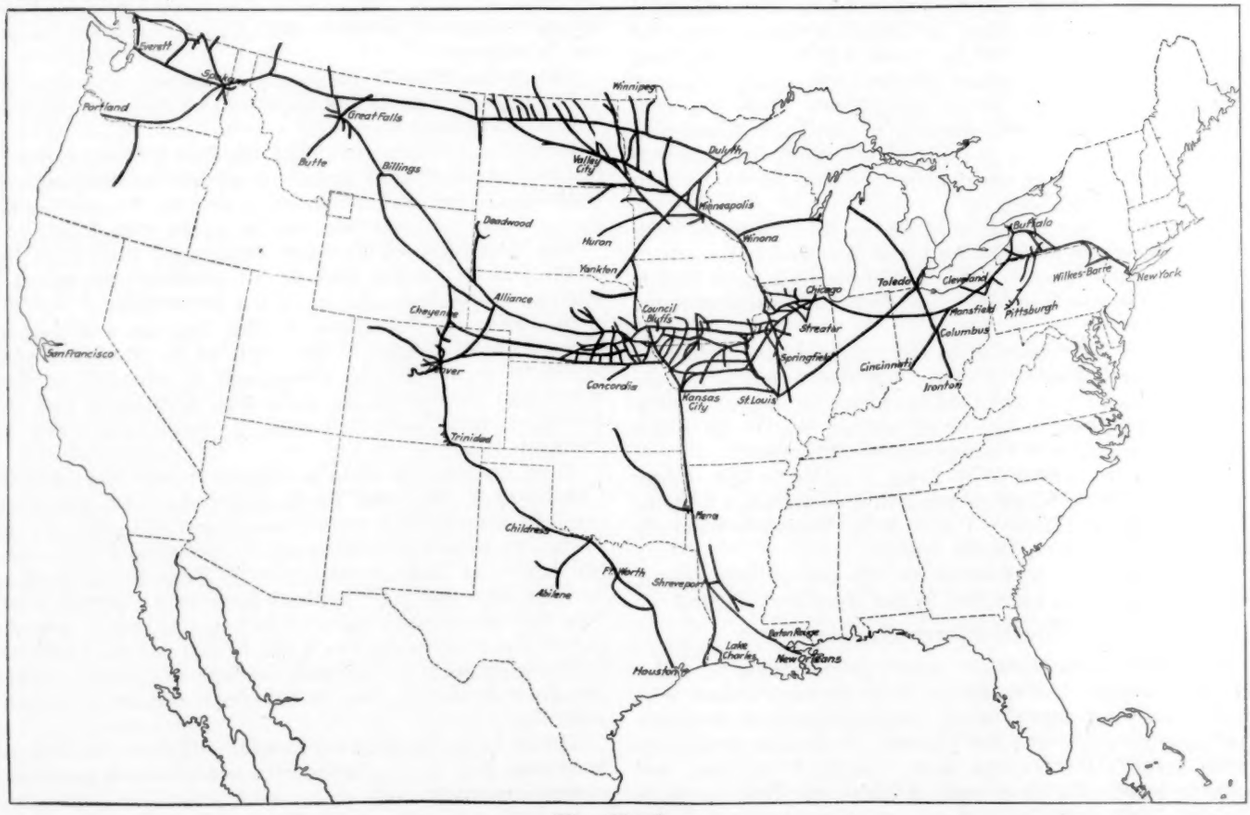
The St. Louis Southwestern, together with the San Antonio & Aransas Pass form a logical extension of this system to the extreme southwest.

By adding the Missouri & North Arkanses, with running rights from Joplin to Kansas City, Kansas City secures a



The Central

Chicago, Peoria & St. Louis
Chicago, Rock Island & Pacific
Denver & Rio Grande
El Paso & Southwestern
Mobile & Ohio
New Orleans, Texas & Mexican
New York Central, exc. Lake Erie & Western
Northern Pacific
Virginian
Western Pacific

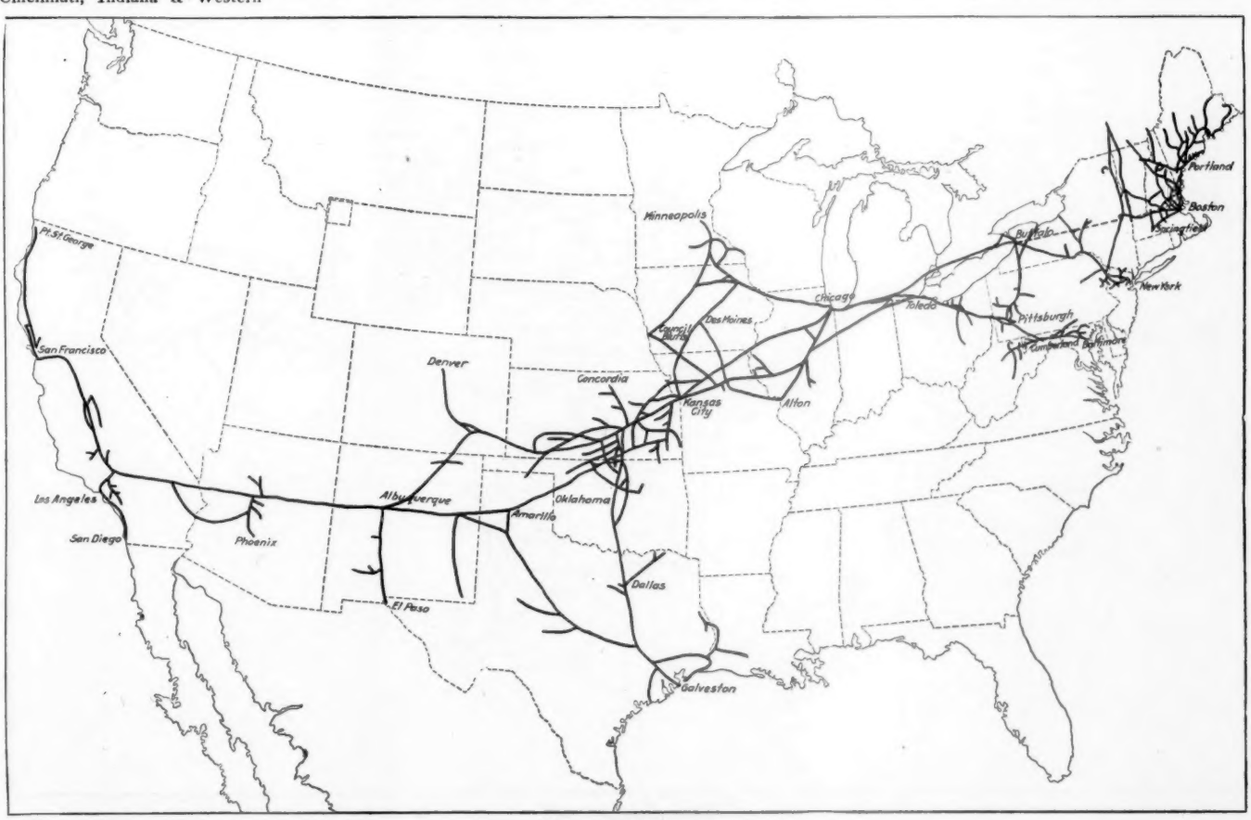


The Northern

Ann Arbor
Chicago, Burlington & Quincy
Colorado & Southern
Denver & Salt Lake
Erie
Great Northern
Green Bay & Western
Hocking Valley
Kansas City Southern
Louisiana & Arkansas
Louisiana R. R. & Navigation
Midland Valley
Pittsburgh & Shawmut
Pittsburgh, Shawmut & Missouri
Toledo, St. Louis & Western

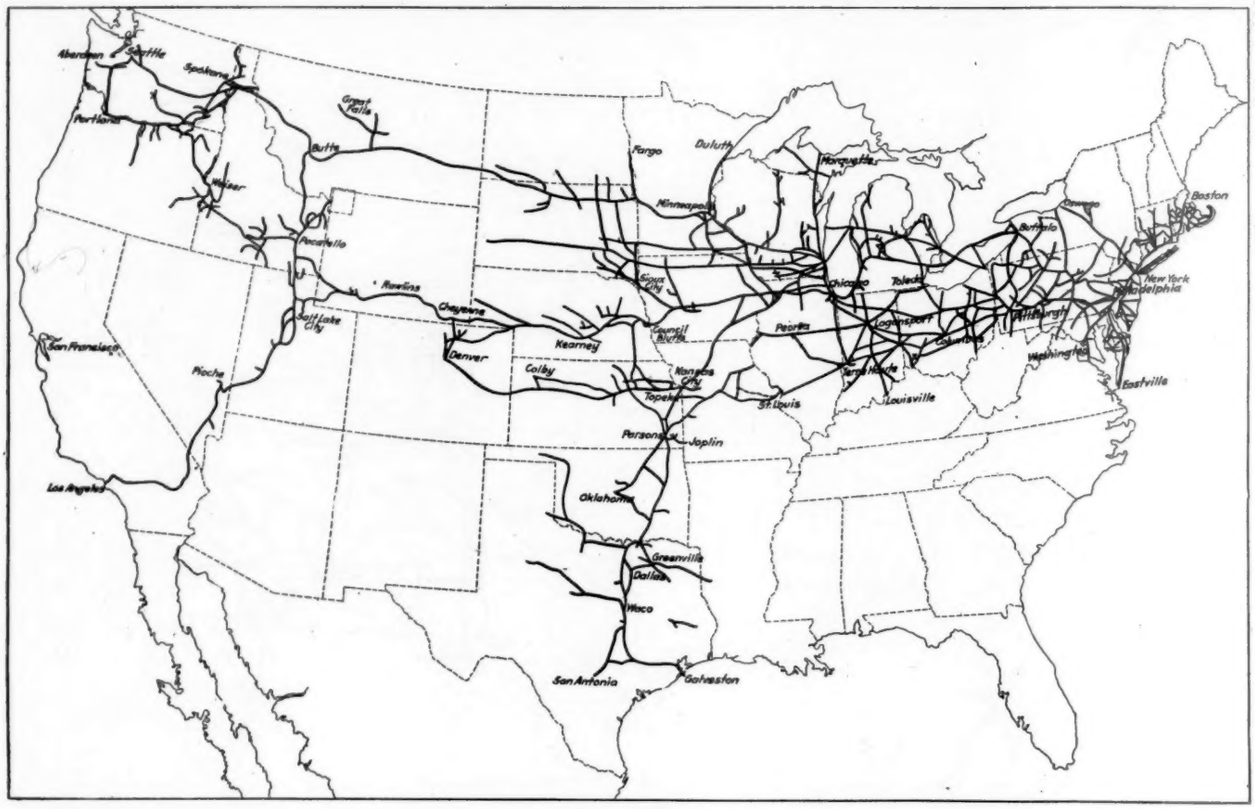
The Midland

Alabama, Tennessee & Missouri
Carolina, Clinchville & Ohio
Central of Georgia
Chesapeake & Ohio
Cincinnati, Indiana & Western
Georgia & Florida
Georgia Coast & Piedmont
Illinois Central
Lake Erie & Western
Lehigh Valley
Minneapolis & St. Louis
Missouri & Northern Arkansas
New York, Chicago & St. Louis
San Antonio & Arkansas Pass
St. Louis Southwestern
Seaboard Air Line
Tennessee Central



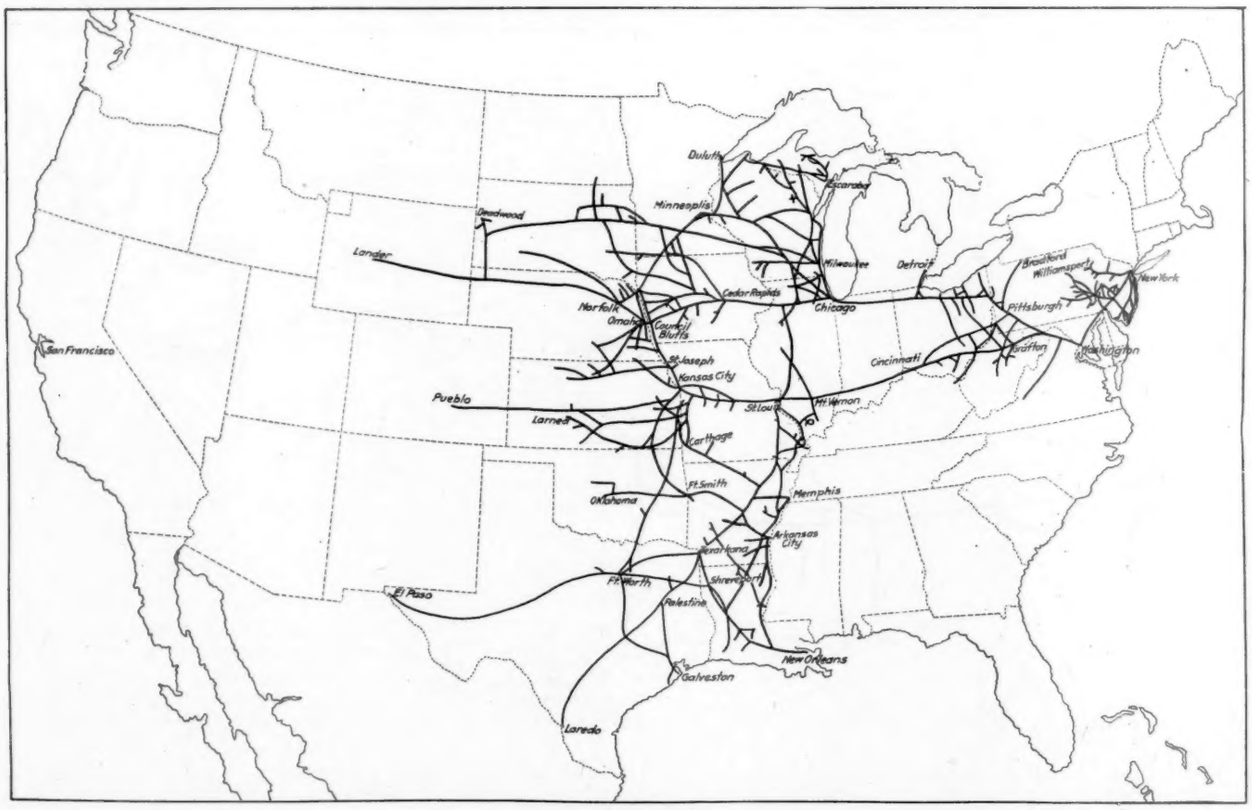
The Interocean

Atchison, Topeka & Santa Fe
Boston & Maine
Buffalo, Rochester & Pittsburgh
Chicago Great Western
Delaware & Hudson
Delaware, Lackawanna & Western
Maine Central
Pittsburgh & Western Virginia
Rutland
Wabash
Western Maryland
Wheeling & Lake Erie



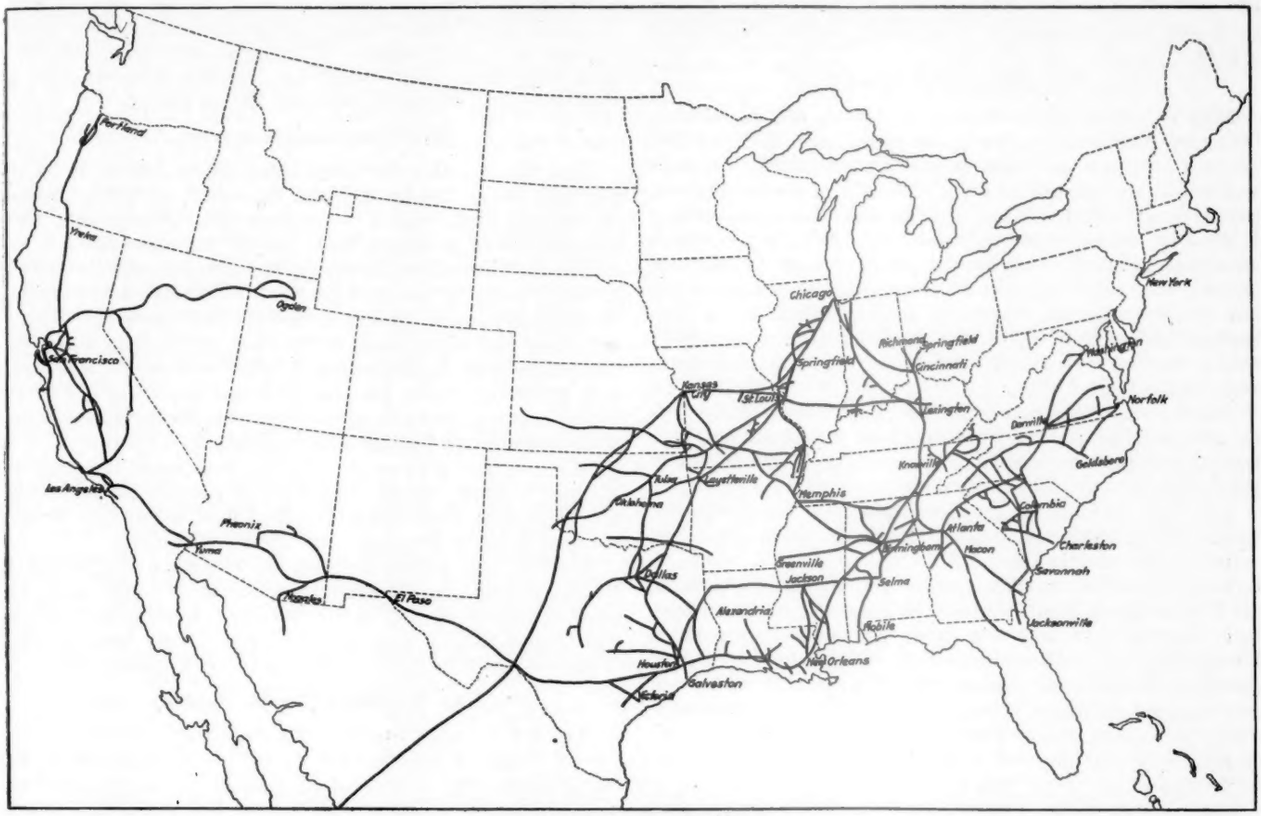
The Union

Buffalo & Susquehanna
Chicago, Milwaukee & St. Paul
Chicago, Terre Haute & Southeastern
Lehigh & New England
Los Angeles & Salt Lake
Missouri, Kansas & Texas
New York, New Haven & Hartford
New York, Ontario & Western
Pennsylvania Railroad
Pere Marquette
Union Pacific



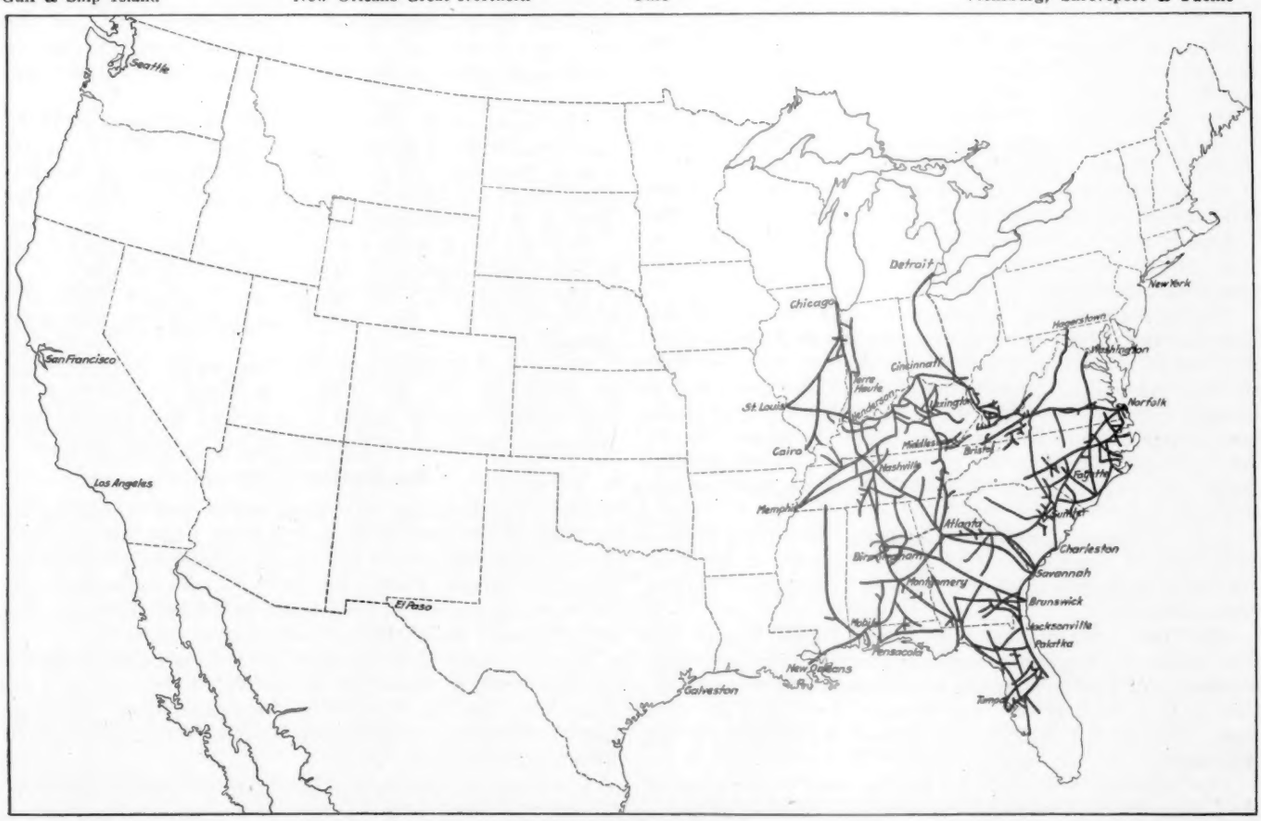
The Continental

Baltimore & Ohio
Central of New Jersey
Chicago & North Western
Chicago, St. Paul, Milwaukee & Ohio
Fort Smith & Western
International & Great Northern
Litchfield & Madison
Missouri, Oklahoma & Gulf
Missouri Pacific
Reading
St. Louis, Iron Mountain & Southern
Texas & Pacific



The Southern—Pacific

Alabama & Vicksburg
Chicago & Alton
Gulf & Ship Island
Kansas City, Mexican & Orient
Chicago, Indianapolis & Louisville
New Orleans Great Northern
St. Louis-San Francisco
Southern Ry. excepting Mobile & Ohio
Southern Pacific
Texas Midland
Vicksburg, Shreveport & Pacific



The Southeastern

Atlanta & West Point
Atlanta, Birmingham & Atlantic
Atlantic Coast Line
Chicago & Eastern Illinois
Detroit, Toledo & Ironton
Georgia Railroad
Georgia, Florida & Alabama
Gulf, Mobile & Northern
Louisville & Nashville
Louisville, Henderson & St. Louis
Nashville, Chattanooga & St. Louis
Norfolk & Western
Norfolk Southern
Rights, Toledo-Columbus
Savannah & Atlanta
Western of Alabama

new connection towards New Orleans, via the Illinois Central route and also a connection with the St. Louis Southwestern system.

The Interocean System

Map No. 4, called the Interocean system, has as its backbone, the Atchison, Topeka & Santa Fe, with $222,000,000 of common stock on which 6 per cent dividends are paid and much more earned and $125,000,000 of preferred stock, paying 5 per cent dividends; also the Delaware, Lackawanna & Western, with $42,000,000 stock on which 20 per cent is being paid, and the Delaware & Hudson, with $42,000,000 of stock on which 7 per cent is being paid. This huge system can easily carry the Boston & Maine, which is to have running rights from Albany to Buffalo, at which point it would connect with the Wabash, and thus secure a direct route to the West.

There is also added the Buffalo, Rochester & Pittsburgh to strengthen the Lackawanna's hold on the bituminous tontage of the East and also to give an outlet to the Boston & Maine direct to the Pittsburgh district.

The Wabash forms an excellent connection for the Lackawanna to the west, touching as it does the most important points in the Middle West.

There is added to this system the Western Maryland, the Pittsburgh & West Virginia and the Wheeling & Lake Erie, making a through line from Toledo to Baltimore on Chesapeake bay. Thus the eastern end of the system, the Boston & Maine, would become part of a system with its own rails into the anthracite region as well as into the bituminous region of western Pennsylvania and also forming water connection with another coal road running to the Fairmount, Somerset and Georges Creek regions.

The Chicago Great Western would form the logical line for this road to the northwest and would also give access for the Santa Fe system to the Twin Cities.

The Union System

Map No. 5, called the Union system, has as its backbone the Pennsylvania Railroad, with $500,000,000 of stock, on which 6 per cent is being paid and more earned and the Union Pacific with $100,000,000 of preferred stock, on which 4 per cent is being paid and $222,000,000 common on which 8 per cent is being paid, and more earned.

There is added to this system the New York, New Haven & Hartford and the New York, Ontario & Western, also the Lehigh & New England. New England thus gets direct access via the Poughkeepsie bridge with both the anthracite and bituminous regions.

The New Haven and Ontario & Western lines should also have running rights from near Poughkeepsie to Buffalo, where they would connect with the Pere Marquette lines and thus the New Haven would have a direct through route to Chicago through the manufacturing districts of Michigan. Thus the large manufacturing interests there would be brought directly on a railroad running to the coal and iron districts of Pittsburgh and, as stated, also have their New England connections improved.

As a connection between the Union Pacific and the present Pennsylvania system, the Chicago, Milwaukee & St. Paul road with its double track line between Chicago and Omaha serves admirably.

The Oregon-Washington part of the Union Pacific system makes an excellent connection for the Chicago, Milwaukee & St. Paul at Spokane for Portland and the competition between the present Union Pacific system and the Chicago, Milwaukee & St. Paul in Eastern Washington, is not important.

The Missouri, Kansas & Texas is a natural extension of the Union Pacific to the Gulf of Mexico. There is added to this system in the Middle West the Chicago, Terre Haute & Southeastern, which handles about 5,000,000 tons of coal annually which would strengthen the St. Paul system which is weak in its coal supply. This system also serves the Bedford stone district and would give the Pennsylvania lines a hold on this traffic which they now do not possess.

The Continental System

Map No. 6, called the Continental system, has as its backbone the strong Chicago & North Western, with $145,000,000 of common stock, paying 7 per cent and earning more, and $23,000,000 of preferred stock, paying the same rate.

The eastern end of the system is formed by the Baltimore & Ohio, which is paying 4 per cent dividends on $160,000,000 common and 4 per cent on $60,000,000 preferred. There are added two strong roads in the East, which form a natural connection with the Baltimore & Ohio, that is the Reading, with $70,000,000 of 4 per cent preferred stock and $70,000,000 of common stock, on which 8 per cent dividends are being paid, and also the Central of New Jersey.

In the southwest there are added to these roads the original Missouri Pacific system, consisting of the Missouri Pacific, the St. Louis, Iron Mountain & Southern and the International & Great Northern and Texas & Pacific.

There is also added, in order to strengthen the Missouri Pacific system, the Missouri, Oklahoma & Gulf, running from Joplin southwest to Denison and forming a through line from Kansas City to the southwest. This forms a very strong system with a heavy coal, grain and lumber traffic.

The Southern-Pacific System

Map No. 7, called Southern-Pacific system, consists of the present Southern Pacific with its $275,000,000 of stock, on which 6 per cent is being paid and more earned, together with the Southern Railway, which of late years has grown much stronger, also the St. Louis-San Francisco, which is more or less supplementary to both of these lines, forming a direct line to St. Louis and Kansas City for the Houston & Texas Central division of the Southern Pacific, and also forming a direct line via Memphis to Kansas City, for the Southern Railway system from Birmingham, and from Chattanooga.

The Kansas City, Mexico & Orient, in connection with the Southern Pacific at Alpine, and the 'Frisco at Wichita, forms a short connection for the Southern Pacific into Kansas City and also an excellent line to Mexico, whenever things settle down in that unfortunate country.

The Chicago & Alton forms the logical connection for this system from Kansas City and St. Louis to Chicago.

The Alabama & Vicksburg and the Vicksburg, Shreveport & Pacific form a line into Texas through the Shreveport gateway.

The Texas Midland is a link between the Paris Division of the Frisco and the Houston & Texas Central and the Gulf & Ship Island, should be a natural feeder to the New Orleans & Northeastern Division of the Southern Railway.

Southeastern System

Map No. 8, called the Southeastern system, has as its backbone the Norfolk & Western, paying 8 per cent on $120,000,000 common and 4 per cent on $22,000,000 preferred stock; the Atlantic Coast Line, paying 7 per cent on $67,000,000 common stock, and the Louisville & Nashville, also paying 7 per cent on $72,000,000 of common stock.

There is added to this system the Norfolk Southern on the southeast, which forms the natural supplement to both the Coast Line and the Norfolk & Western, Atlanta, Birmingham & Atlantic, which makes a better through line from Birmingham easterly.

The Georgia, Florida & Alabama is the natural feeder of the Atlantic Coast Line.

The Savannah & Augusta makes a new through line in

connection with the Georgia Railroad from Savannah via Atlanta to all Ohio river points.

The Chicago & Eastern Illinois forms the logical entrance for this system into Chicago via Evansville and in connection with the Gulf, Mobile & Northern and Paducah division of the Nashville, Chattanooga & St. Louis, makes a new Chicago-New Orleans through line.

The Detroit, Toledo & Ironton brings the Norfolk & Western into Detroit and also in connection with the Norfolk & Western via Roanoke and the Winston-Salem Southbound makes a good through line from all points in the Southeast to points in Middle West. This would be a system touching all points on the Atlantic Gulf coast from Washington to New Orleans, forming a strong through line from the East, Middle West and Chicago and St. Louis to all points in the Southeast.

Terminals and Belt Lines, Canadian Lines, Etc.

The matter of consolidating the terminals and the building of belt lines for joint use has been dealt with separately in the body of the plan.

There are a number of comparatively short railroads, as well as lines controlled by the three large Canadian railroad systems, which have not been apportioned under the above plan.

Some method can undoubtedly be worked out, under which the consolidated railway companies may be allowed to increase their dividends above 6 per cent whenever rates are reduced below a certain level; in other words, in order to maintain the inducement for close operation the railroad companies might be allowed for their stockholders one-third or one-half of reductions given to the public.

Undoubtedly the personal initiative to operation officials will be perpetuated under the above plan, because the subordinate will always look for promotion as a reward for successful results.

This whole plan will probably be objected to on the ground that these railroad systems seem entirely too big and that it is beyond human ken for any set of officials to manage and supervise 40,000 miles of railroad, earning annually nearly one billion dollars. This should be no more difficult than the management of the United States Steel and other large corporations earning usually around a billion dollars or more. The public wants fewer railroad companies; it wants them to be strong financially and in every other way so it may be well served, and it wants competition. The above plan appears to be the only one under which the weak lines can properly be co-ordinated with the strong lines without reducing competition.

The question of physical valuation has been the bugbear of the railroad situation for many years. Earning capacity is probably the best test of a fair value of properties, but judging from the testimony before the Congressional Committee the bulk of the people and members of Congress themselves still seem to think the railroads are over-capitalized; therefore, the time and expense necessary for valuation must be spent.

Work of American Railway Forces in France*

A Review of the Problems Encountered by the Sixteenth Engineers in Building Transportation Facilities

By Major O. C. F. Randolph

Manager of Sales, Building Department, H. K. Ferguson Co., Cleveland, O.

THE SIXTEENTH ENGINEERS was recruited from railway engineering and operating men principally from Cincinnati, Cleveland, Toledo, Detroit and Grand Rapids, immediately after war was declared. H. Burgess, United States district engineer at Detroit, was made colonel, and G. H. Webb, chief engineer of the Michigan Central, lieutenant colonel. The regiment was mobilized at the Detroit fair grounds under a war department order of June 5, 1917. On July 27 it left for Is-sur-Tille, France, via Halifax and England. On arrival at its destination, the regiment was assigned immediately to the construction of needed facilities for an advance base at this point.

The distribution of material across the front for the northern sector in France was to be made from Gievre and for the southern sector from Is-sur-Tille. Gievre was at the same time to serve as a main storehouse. Each depot was to hold reserve supplies for a million men—Gievre for six months and Is-sur-Tille for one month. In addition, each one necessarily maintained a mobile supply, so that they could constantly keep a million men operating in the field without disturbing the permanent reserve.

This was our problem: the building of docks of sufficient size to handle supplies; a terminal at the base to facilitate their handling; an intermediate base at Gievre and an advance base at Is-sur-Tille, and engine terminals and divisional yards to handle the increased traffic.

All materials and tools had to be bought in the same manner that they would in this country. Of course, some of the supplies were secured from some of our own forces, but this involved as much trouble as buying them here. For a large job, the source had to be located, availability determined upon and the initiative for that necessity rested upon the man desiring the supplies. In this connection it is worthy of note that we never caught up with lumber, or rather, it never caught up with us, as up to the time I left we still had a man looking for lumber and were taking every stick that we could secure. At Is-sur-Tille the vast majority of the lumber was secured from Switzerland. The Swiss Government several times threatened to shut down on it, but never did. We even received numerous cars from German railroads, some of them having shipping tags on them which indicated they had come from Germany and at a recent date. Our agreement with the Swiss mills called for our furnishing cars and they returning them to us. Probably the Germans had the same arrangement, and they possibly secured some of our cars as we secured some of theirs. Lumber was also secured in large quantities from Scandinavia. Toward the latter part of the work at Is-sur-Tille we began to secure lumber from the American mills. These mills were operated by the 10th and 20th Engineers, who were foresters recruited from the lumber regions of this country. They brought their own equipment, and set up the mills in the French forests.

Although our men were experienced lumbermen and operated in the forests they could only cut, even under the stress of war conditions, such trees as were indicated by French

*Abstracted from an address delivered before the Cleveland, Ohio, Engineering Society on March 25. Major Randolph joined the army in July, 1917, as second lieutenant with the Sixteenth Engineers, Railway, with which unit he was connected until discharged on December 15, 1918.

forestry authorities. We could not cut a single tree, although we bought the land, or made proper arrangements with the owners, without receiving the consent of the government forestry officials. When the lumber started coming, it came by the train load and contained nothing but 3 in. by 9 in. and 1 in. boards. The boards had not been edged, but were delivered just as they came from the gang saw.

Our labor was supplied by the 1,700 men in our regiment, 3,000 infantrymen and 2,000 other engineers. There were also 600 Spanish contract laborers present.

In order to secure the maximum output of work from these men, every project was scheduled and time was the reward given the men. A portion of work was given to a man and any time saved was his own. This really produced wonderful results. The man-day output for 4,000,000 board feet of lumber was 350 ft. per man. That includes all overhead hanging of warehouse doors, excavation and other labor. When in Washington I looked over the costs for American camps, and using their rate of wages, they averaged about one-half that output on their carpentry. Their work was but little more difficult than ours and their figures included carpentry alone with no overhead.

On one occasion we had a camouflage factory to build in Dijon. We were notified one Thursday to get ready to build it, the site was indicated, and we shipped the lumber from Is-sur-Tille at once. On Saturday we received word that we might go ahead with the work. The project was to include two buildings of the warehouse type, one 300 ft. and one 400 ft. long, also an open shed 40 ft. by 500 ft., with nothing except a roof. Our gangs were well organized at that time and the camouflage company was at full strength of 250 men.

The superintendent and I went to Dijon Sunday and laid out the buildings on the ground, also scheduled the work. Monday at 8 o'clock our men arrived from Is-sur-Tille and at 9 were working. The lumber had arrived on Saturday and we had started six trucks hauling it the two miles to the site, at 7 a. m. Monday. The project was finished on Thursday, and on the same day we received a request from the chief of engineers to submit monthly progress reports on the work and to send him the date of completion.

We left Is-sur-Tille in March for the British front. There we built a narrow gage track and a standard gage rail head, the narrow gage connecting the rail head, an engineering dump, an ammunition dump with the front with leads to light artillery positions. The ruling grade was 2 per cent and the sharpest curve was of 30-meter radius. I believe the speed limit was supposed to be 8 miles per hour, though they ran 15 and 20. In 20 miles of track, a cut of 4 ft. and a fill of 5 were the largest; a 2-foot cut was heavy and most of the grading consisted of 6-in. cuts or fills. The cuts were 9 ft. wide and the fills 10. We used corrugated iron in half segments for culverts. Everything except the large cut and fill mentioned was waste and borrow.

As this work progressed we were short of labor for the excavation. The British had a number of Chinese companies scattered around the country, there being a camp of them not far from us. We convinced the British commanding officer that we could stake out the dirt work and give them piece work. We finally secured one company of about 500 Chinese for one end of the work. We cross sectioned it all and laid the work out each morning for the Chinese. They worked in groups of 60 and we gave them as close to 4½ yards each as possible, a little over, if anything. They usually finished around 4 o'clock.

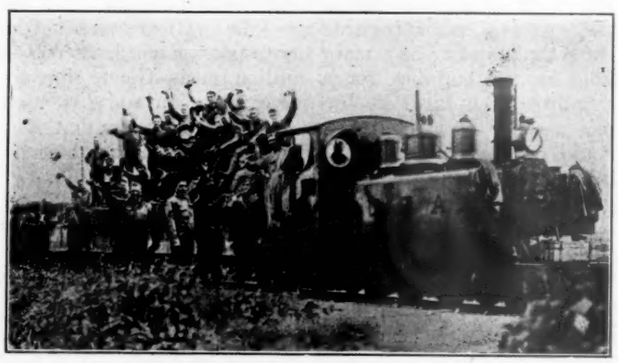
On the completion of this work, we had to double track a section of the railroad from Abberville to Revent. Our section was from St. Requet to Coulevilles. This was the only line of lateral communication left after the March drive. The line from Annes to Arras was not actually taken, but it was under shell fire and certainly was threatened. A good example of what, in our Yankee assuredness, we were pleased to call European stupidity and lack of progressive methods, was exhibited here. The section we were on was heavy work, the cuts and fills being about 50 or 60 ft. Most of the fills had been made for double track as well as part of the cuts. The single track ran down the center of the grade and the British and French authorities would not permit us to throw the track, so a great part of this good grade had to go to waste. They would not permit the existing main to be touched, claiming that if we attempted to throw it the interference to traffic would be more than they could afford. It follows, of course, that they refused to let us use the main line to haul dirt over. The only time we could use it was to unload ties and rail. We handled all the dirt by hand on meter-gage track with ½-yd. and 1-yd. Decauville cars.

After completing this double track we went back to the Nevers cutoff, which was quite a project. The line was 5½ miles long and was a short cut across a meander of the Loire river, which the Paris, Lyons, Mediterranean line from San Mojan had to negotiate on the way to Is-sur-Tille. The saving in mileage was slight, but the saving in elapsed time because of terminal congestion was from 12 to 24 hours. The line to be built involved about 200,000 yards of rock excavation and 300,000 yards of fill. There was also a bridge over the Loire river, which was perhaps 3,000 ft. long, the approach to which constituted one of the heavy fills, most of which was secured from side borrow.

The bridge across the Loire was built with pile approaches and had 14-ft. spans. The river spans were 60 ft. girder spans on pile clusters. River piles were driven from either end with two steam hammers on scows and the approaches were driven by a steam track driver.

We placed the girders over the P. L. M. main line with a Bay City crane. The girders weighed about seven tons, so this was no particular problem, but it was of great interest to the French. They had their superintendent on the job with their division engineer; they came with many misgivings as to what might happen to their track. They left, much impressed with our boys. They were never, however, sufficiently impressed to permit us to put a switch into their main line. Whenever it became necessary to cut the main line it became necessary to have the P. L. M. men do it.

What is to become of these projects we built was always a problem to us, and probably is a big problem to the men that are now in France. Our contract with the French for the railroad work was made with the provision that if they operated over the lines, or the yards, or both, for a period of five years after the war, they should pay the actual cost of the construction as the purchase price for the properties. If they did not so operate over them, they were not to become involved at all. In other words, the lines were thrown back on our hands.



Railway Engineers' Supply Train

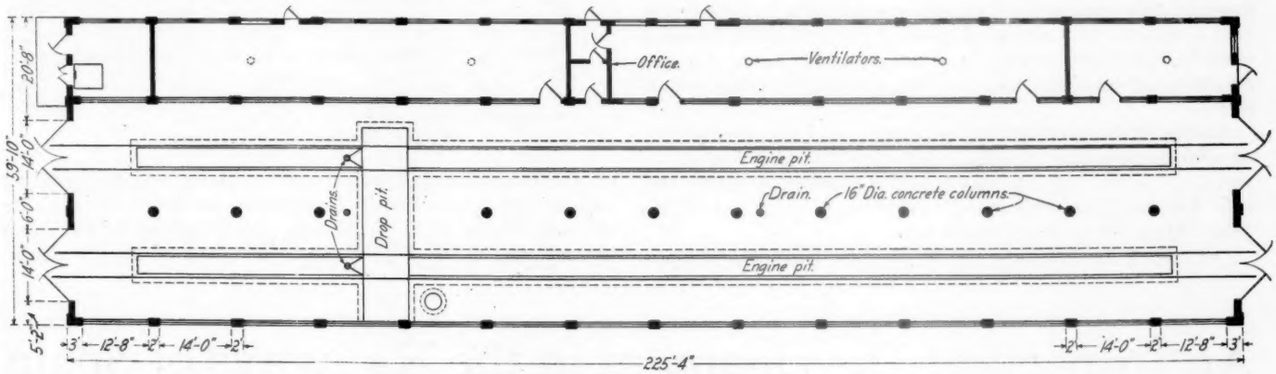
A Rectangular Reinforced Concrete Enginehouse

This Design Was Particularly Adaptable to a Location Where Space for Expansion Was Restricted

THE LONG ISLAND RAILROAD recently completed at Long Island City, N. Y., a rectangular reinforced concrete enginehouse to replace an old brick and timber building, also rectangular in shape, erected in 1888, which had become obsolete. The old building was one of a number of facilities at this terminal, and because of the restricted space available for expansion any relocation of the building would require changes in the other facilities.

To meet this situation it was decided to build a rectangular house on the site of the old building. The new structure is 225 ft. 4 in. long by 44 ft. 4 in. in width with a lean-to 15 ft. 6 in. wide also of reinforced concrete construction, extending the full length of the north side of the house proper. Like the old house, the new structure accommodates light repairs only, the lean-to housing the air compressors, generators, machine shops, storeroom, office and oil house.

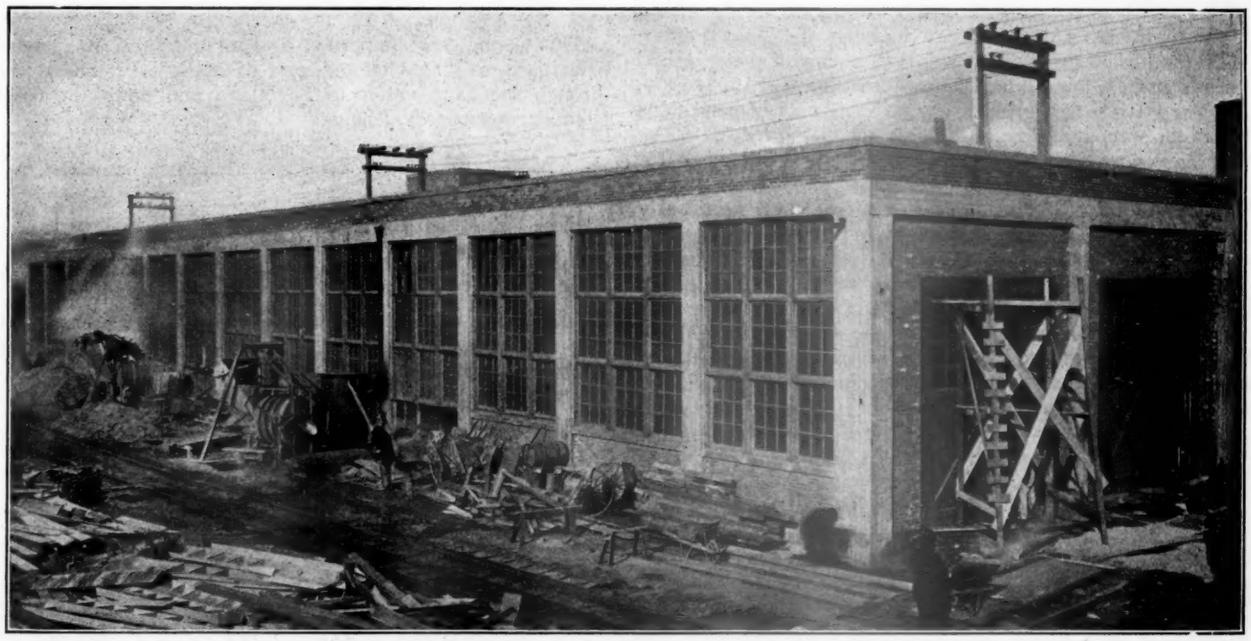
The new enginehouse provides for two tracks spaced 20 ft. center to center and supported over the pits to within 10 ft. of each end of the building. It is designed to accommodate three locomotives on each track and consists of 14 panels spaced 16 ft. center to center of columns, the space between columns being occupied by windows and brick curtain walls.



Floor Plan of the Engine House

The building is located within 150 ft. of tidewater and is on made land. The entire structure is carried on wood piles 30 to 35 ft. long, some of which supported the old building. New piles were driven where necessary.

The character of the foundation made it necessary to support the tracks in the house and to make provision for jacking foundations. To provide this support, piles, spaced 5 ft. between centers, were utilized or driven along the lines of the rails. The manner in which this single line of piles



An Exterior View of the House Shortly Before Completion

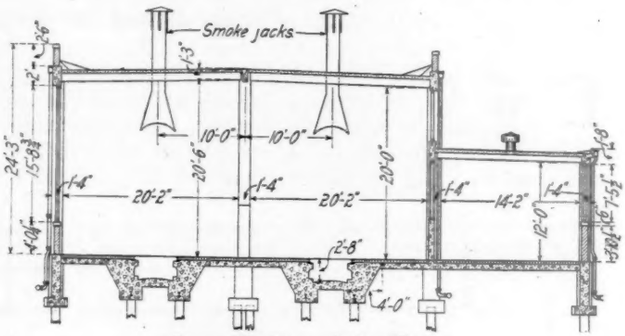
was utilized to provide support also for jacking by extending the engine pit walls laterally and the provision of a batter inwardly is indicated on the drawing showing a section through the engine pits. A drop pit 8 ft. 8 in. wide and 5 ft. 6 in. deep connects the two track pits.

The floor in the house proper consists of an 8-in. concrete mat upon which vitrified paving blocks were placed on edge to accommodate the heavy trucking. The lean-to has the same paving as the engine house and the entire building is steam-heated and electric-lighted.

The roof, like the building, is of reinforced concrete construction, and consists of three panels in each 16-ft. bay. The roof beams are 1 ft. 3 in. deep, while the slab is 3½ in. thick and is protected by Barrett specification roofing. The roof supports two pairs of reinforced concrete poles carrying electric light and power lines and a pent house for the accommodation of the transformers and the electrical equipment.

Owing to the proximity of salt water and the atmospheric conditions obtaining wooden sash were installed instead of metal. Copper flashing was specified instead of galvanized iron for the same reason. The 12 smokejacks are of the Johns-Manville asbestos-board type.

Outside of the building and to the east, two wash-out pits of reinforced concrete construction, 40 ft. long, have been installed adjacent to an installation of the National Boiler Washing Company. The area occupied by this facility is also paved with vitrified brick on a concrete base.



Cross Section of the House

The plans for this project were prepared and the building constructed by the Austin Company, Cleveland, Ohio, under the supervision of L. V. Morris, chief engineer of the Long Island, and G. C. Bishop, superintendent of motive power.

An Important Development in the Railways of Spain

With an Account of a Project for a Proposed New Trunk Line from France to the Straits of Gibraltar

By F. Lavis

IN THREE PARTS—PART II.—STATISTICS AND LAWS

GENERAL RAILWAY STATISTICS for Spain are published by the government in the "Statistics of Public Works," and an abstract of the results for some of the principal lines is given below. These figures, for the years 1908, 1909, 1910 and 1911, will give an approximate idea of conditions before the war, and some of the data for the Norte, M. Z. A., Andaluces and Central Aragon for 1914, 1915 and 1916, obtained from other sources, will show what changes have been caused by the increased costs of operation, principally the higher cost of coal in those years. No figures were available for the year 1917, but it is known that the operating costs were much higher in 1917 than in 1916, and even in this latter year evidence of an increased operating ratio and consequent decrease in net returns were observable. On the Central Aragon Railroad, where the operating ratio had been approximately 50 per cent, the greatly increased cost of coal was expected to bring it up to nearly 80 per cent in 1917, although the gross revenue was higher.

F. C. Del Norte

This is the most important system in Spain; it operates principally to the north and west of Madrid but has a line through the Ebro valley to Barcelona and down the coast from Tarragona to Valencia.

	Kilometres	Miles
The total length is	3,692	2,289
Second track	426	264
Total main line track	4,118	2,553
Under construction	67	42
	4,185	2,595

The revenues from operation, and expenses for 1915 and 1916, the last two years available, were as follows (in pesetas):

	Gross receipts	Expenses	Net	Ratio
1915	154,309,816	78,402,533	75,907,283	48.5
1916	172,713,940	100,225,800	72,488,140	58.1

RAILWAYS OF SPAIN

REVENUES OF SOME OF THE PRINCIPAL LINES

	Length kilometres	Net revenue from operation Pesetas* per kilometre				Operating ratio			
	1911	1908	1909	1910	1911	1908	1909	1910	1911
M. Z. A.	3,664	7,256	17,737	18,609	18,693	44.6	43.0	41.7	43.0
Norte, whole system	3,687	19,795	19,134	20,877	21,480	43.8	45.5	44.2	43.8
Main line to Irun and branches	910	28,105	27,258	29,871	28,654	39.2	42.1	41.4	43.1
Lerida-Tarragona	103	7,193	8,448	7,422	10,255	63.2	59.7	62.9	55.0
Alsasua-Zaragoza	776	19,596	18,617	17,847	19,454	41.4	43.3	44.1	42.6
Andalucez	1,084	9,240	9,188	13,287	13,752	53.9	54.1	56.4	56.9
Madrid, Caceres, Portugal	775	4,683	4,401	4,692	4,131	59.5	61.8	61.4	64.8
Central Aragon	298	4,823	5,285	5,710	6,577	57.9	52.6	49.9	47.6
Medina-Vigo	295	6,497	5,199	5,727	6,183	58.6	63.9	61.6	60.6
Average of all lines, 5 ft. 6 in. gage	11,384	14,059	13,887	15,284	15,376	47.7	48.0	46.1	46.7
Meter gage—Vascongada	159	11,531	8,858	11,442	23,656	45.6	59.0	46.2	43.8
Robla—Valmaseda	.....	.....	.....	30,743	30,550	....	....	57.6	57.9

Normally about five pesetas equal one dollar. A kilometre equals 0.62 miles.

The total revenue per kilometre for the last 14 years has been as follows:

PESETAS PER KILOMETRE

	Passengers	Express	Freight	Various	Total
1903	8,428	2,854	20,852	102	32,236
1904	8,742	2,819	20,310	103	31,974
1905	8,533	3,040	20,030	184	31,787
1906	8,676	2,987	21,000	252	32,915
1907	8,963	3,203	21,670	396	34,232
1908	9,283	3,214	22,366	444	35,307
1909	9,163	3,244	22,304	427	35,138
1910	9,529	3,094	23,058	406	36,087
1911	9,850	3,226	23,884	329	37,289
1912	10,346	3,336	26,797	425	40,904
1913	10,832	3,437	27,299	483	42,051
1914	10,440	3,380	25,490	453	39,763
1915	10,083	3,473	27,839	462	41,857
1916	11,171	4,006	31,190	491	46,858

Other statistics of operation of the Norte are as follows:

Passenger kilometres	936,528,651
Average distance	56
Average fare ....Pts.	2.493
Average fare per kilometre	.043

	Division by classes: Proportion number	Per cent earnings
First	2.63	13.86
Second	8.73	15.23
Third	88.64	70.91

Freight ton kilometres	1,656,227,772
Average haul, kilometres	174
Average receipts per ton....Pts.	11.211
Receipts per ton kilometre	.643

The net earnings per kilometre and the operating ratios for each part of the system are as follows, for the years 1914, 1915 and 1916, and to some extent show the effects of the war, though this was more marked in 1917.

F. C. DEL NORTE

PER KILOMETRE OF LINE—PESETAS

	Net revenue 1914	1915	1916	Operating ratio, per cent 1914	1915	1916
Main Line, Madrid to Irun	28,129	29,977	29,836	48	45	50
Santander branch	11,224	12,260	11,450	58	55	62
Barcelona branch	18,050	18,665	17,165	50	52	60
Bilbao branch	24,253	26,210	27,211	45	43	50
Asturias, Galicia & Leon	13,404	14,131	10,837	60	57	70
Lerida, Reus & Tarragona	6,348	5,953	6,483	74	73	78
Villabona—Aviles	8,016	20,821	3,389	78	61	92
San Juan de las Abadesas	17,363	17,958	13,147	50	50	67
Soto del Rey	7,786	13,586	4,920	71	61	83
Almansa, Valencia, Taragona	19,170	21,603	23,810	50	50	54
Valencia, Utiel	6,719	5,307	6,739	63	69	66
Entire system	19,187	20,561	19,633	50	51	58

Madrid Zaragoza & Alicante

PER KILOMETRE, PESETAS

	Gross revenue	Expenses	Net revenue	Operating ratio
1908	31,142	13,886	17,256	44.6
1909	31,119	13,382	17,737	43.0
1910	31,911	13,301	18,609	41.7
1911	32,796	14,102	18,693	43.0
1912	.....	15,113	.....	....
1913	.....	17,570	.....	....
1914	34,993	17,493	17,500	50.0
1915	36,753	18,259	18,494	49.7
1916	41,301	22,518	18,783	54.5

The annual report for the year ending December 31, 1916, gives the following figures, showing the increase in the cost of coal during the past eight years. (The M. Z. A. gets a large part of its coal from its own mines near Seville.)

	Average cost of coal per ton pesetas
1910	27.62
1911	28.88
1912	29.50
1913	32.72
1914	33.68
1915	44.62
1916	61.64
1917, probable	69.00

	Per cent of each class: Number	Receipts
PASSENGER STATISTICS—		
1st	4.5	26.5
2nd	11.5	12.5
3rd	84.0	61.0

Average Length of Journey

1st class	180.5 kilometres
2nd class	46.2 kilometres
3rd class	46.4 kilometres
All classes	52.5 kilometres

Receipts per Passenger Kilometre

1st class ....Pts.	0.079
2nd class ....Pts.	0.057
3rd class ....Pts.	0.038
All classes ....Pts.	0.046

FREIGHT—	
Total ton kilometres	1,406,405,174
Average haul....kilometres	152.8
Receipts per ton....Pts.	10.48
Receipts per ton. per kilometre....Pts.	0.69

It will be noted that the average receipts per ton mile are equivalent to approximately 2.3 cts., as compared with about 0.7 cts. per ton mile in the United States.

FERROCARRILES ANDALUCES

This railroad operates in the south of Spain between Seville and Cadiz, Cordoba, Algeciras, Malaga, Alicante, etc.; it has a total length of 1,261 kilometres. The earnings and expenses of the entire system and some of the more important lines are as follows:

PESETAS

Year	Gross revenue	Expenses	Net	Operating ratio, per cent
ENTIRE SYSTEM, 1,261 KILOMETRES—				
1914	23,364	12,680	10,684	50
1915	24,690	13,388	11,302	54
1916	28,388	17,127	11,261	60
SEVILLE-JEREZ-CADIZ, 171 KILOMETRES—				
1914	34,700	18,187	16,513	53
1915	36,029	19,604	16,425	51
1916	41,519	25,252	16,267	63
CORDOBA-MALAGA, 196 KILOMETRES—				
1914	39,969	21,403	18,566	54
1915	42,540	21,170	21,370	50
1916	48,590	28,526	20,064	60
PUENTE-GENIL LINARES, 176 KILOMETRES—				
1914	21,203	10,556	10,647	50
1915	22,813	11,556	11,257	51
1916	26,396	14,408	11,988	54

Railway Laws

The following is a very brief outline of some of the general conditions governing the construction of railways under the laws of Spain.

Spanish railway law is based on the broad theory that the State is the owner of all lines conceded, whether for general service or private use, the concessionaires whether private individuals or companies being solely usufructs for the time of the concession.

Foreign capital employed in railway construction as well as loans for this object are under the safeguard of the State, and are exempt from reprisals, confiscations, or embargoes on account of war.

Railway construction is governed by the provisions of two "general" laws, modified in detail by many "Royal Orders" and decrees, and by the regulations promulgated from time to time by the General Direction of Public Works.

The original basic law was that of 1855; this however, after the revolution of the late 60's was superseded by the *Law of November 23rd*, 1877, which with the *Regulations of May 24th*, 1878, constitutes the general law relating to the construction of railways.

This law, however, was intended to govern only the construction of the main system of railways. It specified in detail certain lines, including those already in existence at that time which were to form the "General plan of railroads," and to which this law applied. The regulations of May, 1878, however, provided means for, and the conditions under which, other lines might be added to this system, and on December 25, 1912, a law of complementary lines was passed, the object of which was to procure the prompt construction of certain specified lines.

Besides this main system, it was proposed to build other lines of lesser importance as branches and feeders, and the construction of these lines is provided for in the *Law of Secondary and Strategic Railroads* of *February 23*, 1912, and the *Provisional regulations* for the application of this law of *August 12*, 1912. This law and the regulations "reformed" the original law of 1908 and the complementary

law of 1909. (*Note*—A detailed list of secondary and strategic lines authorized under this law with additions to June, 1916, will be found in the Railway Annual for 1916, p. 241, et seq.)

In general the law of 1877 was designed to provide lines of 1.67 meter (5 ft. 6 in.), gage for fast heavy traffic, as this was then understood. The secondary railways were to be of narrower gage and lighter construction, though there is nothing in the provisions of the law of secondary railways which would prevent its application to the construction of more substantial lines of any gage, and in any event the provisions of the law of 1877 provide for a type of construction much lighter than that necessary to meet modern main line traffic conditions.

Subsidies

Both laws provide for the construction of lines, with and without government aid, the latter having certain privileges which the former do not have. Lines receiving subventions in any form carry the mails free of charge.

The law of 1877 makes provision for the payment of a subvention equal to 25 per cent of the estimated cost, but in no case can this subvention exceed Pts. 60,000 per kilometre. The law of complementary railways of 1912 provides for an advance (Anticipo reintegrable) of Pts. 15,000 per kilometre in addition to the Pts. 60,000. This Pts. 15,000 is, however, to be returned to the state from "the first products obtained from operation."

The secondary and strategic railways may receive from the government a guarantee of interest of 5 per cent on the cost of construction up to an amount not exceeding Pts. 250,000 per kilometre unless the guarantee on a larger amount is specially authorized by the Cortes. The total amount payable under this law must not exceed Pts. 15,000,000 per annum.

If payments under this guarantee are still necessary after ten years from the date of commencing operations, the government may nominate a delegate to intervene in the management; this delegate ceasing his functions as soon as the line produces at least 5 per cent for three successive years.

When the net earnings exceed 6 per cent for three successive years, one-third of the excess after the third year shall be used toward reimbursing the government for any payments made on account of the guarantee of interest.

All concessions for lines built under the provisions of the law of secondary and strategic railways of 1912, and for all those receiving government aid, are for a period not exceeding 99 years, after which the lines revert to the State without compensation to the owners. (Some of the first lines built in 1850 and 1860 are beginning to look with some anxiety to the comparatively near approach of the termination of their concessions, as on none of them has provision been made for amortization within the specified period.)

No concession constitutes a monopoly.

The general supervision of railway construction and operation is a function of the Minister of Public Works (Fomento) acting through the General Direction of Public Works, and this in turn through five "Divisions of Railways."

On presentation of the application for a concession, which must be accompanied by detailed maps, plans, estimates, etc., in specification form, this is passed for "confrontacion y informe" to one of these railway divisions, designated by the General Direction of Public Works. This involves the checking of the maps and profiles on the ground, and of the general design of the railway, track layouts, stations, amount and kind of rolling stock, etc., etc. Modifications or changes are suggested, if necessary or desirable, and finally all these things being in order, the project is approved. This examination is at the expense of the applicant for the concession.

Up to this point the procedure is the same for any railway, but where the project receives government aid, the estimates of quantities and costs, have also to be checked and approved by the government.

Tariffs

The maximum tariffs chargeable on the proposed lines are submitted by the author of the project, and if not acceptable to the Council of Public Works, must be authorized by the Cortes. Generally speaking, the tariffs are regulated entirely by distance.

When the State guarantees the interest, the tariff rates cannot be reduced or changed without the consent of the government.

During the time the State pays any part of the guaranteed interest, it reserves the right to fix the maximum tariffs on minerals, poultry, cattle and in general, on foodstuffs, fertilizers and seeds.

Secondary lines not receiving guarantees of interest may fix their tariffs without intervention of the government, and apparently by Article 26 of the law of 1912, those lines receiving a subsidy may come under this provision, if this condition is fixed before the letting, that is, specified in the concession.

Status of Concessionaires

All corporations formed for the construction of railways must be domiciled in Spain, and are subject to Spanish laws.

All plans, etc., must be signed by a duly qualified engineer, which usually means the employment of an "Engineer of Caminos Canales y Puertos" for this purpose, notwithstanding the professional standing, etc., of any foreign engineer.

Traffic Performance in 1918

THE VOLUME of traffic handled in 1918, on which the railroads fell short of earning their standard return by approximately $200,000,000 in spite of increased rates during the latter half of the year, shows an increase compared with the test period on which the standard return is based of more than one-fifth in ton miles of freight and one-fourth in passenger miles. These results are shown by a preliminary study of the statistics of Class I railroads compiled by the Bureau of Railway Economics. Freight traffic performance in 1918 approximated 440,000,000,000 revenue and non-revenue ton miles, an increase of 1.8 per cent over 1917 and of 21 per cent as compared with the average for the test period, the years ending June 30, 1915, 1916 and 1917. This freight performance was the greatest in the railway history of the United States, surpassing even the excellent performance of 1917, nine months of which was accomplished under the supervision of the Railroad's War Board.

The following percentage comparisons of the several months of 1918 with the corresponding months of 1917 are of interest:

TOTAL TON-MILES

Month of 1918	Per cent of increase over 1917
January	d 16.4
February	2.9
March	7.1
April	8.3
May	d 4.5
June	d 3.6
July	4.4
August	6.7
September	8.8
October	3.5
November	d 2.4
December	5.3
The year	1.8

The passenger business for 1918 approximated 43,000,000,000 passenger-miles, an increase of 7.9 per cent over 1917 and of 25.7 per cent over that of the test period. As in the case of freight, this was a record-breaking achievement.

As a result of the increased freight and passenger rates made effective during the year 1918, the average receipts per ton-mile rose from 7.15 mills in 1917 to 8.56 mills in 1918. This average does not reflect the full effect of the increase in freight rates, the greater proportion of the new rates being in force only half the year. During January, 1918, the average was 7.26 mills and during December 9.85 mills, the latter month more nearly reflecting the extent of the increased rates than the year's average. The spread between January and December was 2.59 mills, or more than 35 per cent.

Average receipts per passenger-mile increased from 2.09 cents in 1917 to 2.40 cents in 1918. Here again the full effect of the increase in passenger fares is not reflected, since the increases were only in force a little over one-half the period. Statistics are not available for the month of January, but the average for December was about 2.55 cents, an increase over 1917 of 0.46 cent, or slightly over 22 per cent. It should be noted in connection with this average for December that there was an unusually heavy movement during the month of soldiers and sailors on holiday furlough, who were granted a special rate of one cent a mile, while a large number of men discharged from service were proceeding home at a special rate of two cents a mile. These factors tended to keep the December average below what would be the normal average of the passenger rate level now in effect.

The statistics of earnings and expenses of the Class I roads, which have already been published, show an increase in operating revenues as compared with the test period of 44.9 per cent, and of expenses of 74.7 per cent, while the net operating income was 23.7 per cent less than that of the test period, which represents approximately the standard return. The average receipts per ton-mile in 1918, 8.56 mills, represent an increase of 20 per cent over the average for the test period, 7.13 mills. The average receipts per passenger-mile, 2.4 cents, represent an increase of 19.4 per cent as compared with the average for the test period, 2.01 cents.

Temporary Treating Plant Pays Big Returns

Facilities Installed for Contractor Building Yard at Homewood, Ill., Reduced Boiler Repairs and Delays

SAVING of the entire cost of a water softening plant in less than two months' time through the resultant economy in the fuel used in locomotives constitutes an unusual demonstration of the value of water treatment. This, in short, is the nature of the results secured by a contractor on railroad construction in the boilers of two steam shovels, six locomotives and two hoisting engines. The demonstration is especially conclusive because the isolation of the equipment limits its supply of water to a single source and because the record of performance gives a check not only on the total quantity of fuel but also on the relative amount of fuel used per unit of equipment performance.

The Walsh Construction Company of Davenport, Ia., contractor for the grading for the new Markham yard of the Illinois Central at Homewood, Ill. (near Chicago), found the water upon which it was dependent for its boiler supply so unsatisfactory as to cause serious difficulty in the operation of equipment. As a result, a water softening plant was installed which has treated all the water used in the boilers after October 27, 1918, and records of the fuel used before and after the installation of the softener constitute the basis for the conclusions reached with regard to the fuel economy. Some data were also secured on the cost of the boiler repairs, which also bear out established conclusions on the value of water treatment.

The water used was taken from a drilled well 170 ft. deep, the consumption being about 40 gal. per min. An analysis of this water made on September 26, 1918, which is reproduced below, shows that the water contained a considerable quantity of incrusting solids.

Silica	0.677 grains per gal.
Oxides of iron and aluminum	0.093 grains per gal.
Carbonate of lime	9.794 grains per gal.
Sulphate of lime	3.916 grains per gal.
Carbonate of magnesia	10,776 grains per gal.
Sodium and potassium sulphates	13.704 grains per gal
Sodium and potassium chlorides	1.360 grains per gal.
Loss, etc.	.209 grains per gal.
Total mineral solids	40.529 grains per gal.
Organic matter	Trace grains per gal.
Total incrusting solids	25.456 grains per gal.
Total non-incrusting solids	15.273 grains per gal.

This water was used in six 46-ton, six wheel switching-type locomotives, having 155 2-in. flues, 13 ft. 6 in. long, operated at 180 lb. pressure. There were also two 70-ton steam shovels equipped with locomotive type boilers approximately equal in fuel and water consumption to the locomotives in use. In addition there was one 40 hp. locomotive-type boiler and one 25 hp. upright boiler, both used for hoisting engines. All of the boilers were in good condition when the work was started on July 24, 1918. The normal operation of the plant on the day shift was two steam shovels, four locomotives hauling dirt, one locomotive switching and spreading, and one locomotive for reserve. On the night shift one steam shovel was operated and three locomotives were used in hauling and spreading.

With water of the kind available, trouble was experienced in a short time because of the formation of scale in the boilers, which had attained a thickness of ⅛ in. to ¼ in. by the time it was concluded to install a water softener. As matters grew worse, there were engine failures almost daily, and practically all stay and crown bolt flues and mud-rings were leaking more or less. Repairs were good for about three days on the average, the time to make the repairs being from three to five hours on each boiler. One of the engines was in need of new flues and it was estimated that it would be necessary to remove all flues and many stay bolts in the rest of the boilers within two or more months. Electric welding of the flues helped for some time, but in three weeks the leaky condition was about the same as before the welding, although undoubtedly it would have been worse had no welding been done. Trouble was also being encountered with leaky boiler checks, pumps and lubricator valves, while the throttle packing was eaten or corroded by the water. Matters were not as bad as they might have been owing to the fact that there was practically one locomotive on reserve at all times, so that the boiler work on the locomotives did not interfere seriously with the operation.

As a consequence of these conditions studies were made of the possibilities of installing a water softener, and a plant was finally arranged for, which was completed ready

for operation on October 27. This consisted of temporary equipment supplied by the Railroad Water and Coal Handling Company of Chicago. It was composed essentially of a tank of 10 ft. diameter inside, an 18-ft. diameter tank, both tanks being 18 ft. high. In addition to these tanks there was a shallow mixing box mounted on top. The operation of this equipment is simple. Raw water and reagents are pumped independently into the mixing box, from which they pass as a mixture through a 10-in. pipe extending almost to the bottom of the inside tank. The water escaping in this tank rises upward in the tank slowly while the chemical action is taking place, the solid matter precipitated in the meantime being deposited for the most part in the bottom of the tank, which is equipped with a sludge valve through which the sludge may be allowed to escape at intervals. As the treated water approaches the top of the interior tank it encounters a filter which consists of a diaphragm of excelsior interposed between two grids of wooden slats. Passing through this filter the water reaches the top of the interior tank, where it is allowed to escape into the outside tank through two 4-in. pipes extending from the top of the inner tank to near the bottom of the outer tank, the latter serving as storage for the treated water.

The treating plant was placed in service on October 27. In the period from September 6 to October 27 there were a total of 650 boiler shifts in the course of which an average of 4.2 tons of coal per boiler shift was used. Comparing this with the quantity of earth moved by the contractor during this period, it was found that the cost of the coal used per cubic yard of earth handled amounted to $.0306 per cu. yd.

For a period of not quite two months following the installation of the water softener, the coal consumed amounted to 3.1 tons per boiler shift at a cost of only $.0204 per cu. yd. of material graded.

As in all other cases where water softeners have been installed, supplying water for equipment that has been badly incrusted with water that had not been treated, considerable trouble was experienced with foaming as the scale in the boilers was loosened. This necessitated the use of anti-foaming compounds. Some difficulty in the treatment has arisen from the fact that the water obtained from the well is muddy. An increased consumption of water of from 40 gal. per min. to 100 gal. per min. about the time that the softener was installed may be responsible for this condition.

Later information on the coal consumption shows that in the period from December 23 to February 1, during which a total of 437 boiler shifts were worked, the average consumption of coal was 3.8 tons per boiler shift. In a fourth period from February 1 to February 28, inclusive, during which 314 boiler shifts were used, the average coal consumption was 3.3 tons of coal per boiler shift.

Aside from the data on fuel economy the following information is available with respect to the boiler work done on the engines before and after the inception of the water treatment:

BOILER WORK COST ON BOILERS USED BY CONTRACTOR IN MARKHAM YARD

Untreated water period, for two months previous to using treated water:

	Average per day	Per Boiler day
Boilermaker, 12 hr.	$7.85	
Boilermaker's helper, 12 hr.	4.80	
Total cost	$12.65	$1.405

Treated water period during January and February:

	Average per day	Per Boiler day
Boilermaker	$0.62	$0.07

Aside from the above there were several items of special expense on the boilers that cannot be included readily in these statistics. For instance, before the water was treated considerable expense was incurred in electrically welding the flues, amounting to $233.33 per boiler.

Saving Labor in Shop Accounting

By a Traveling Auditor

THE ACCOUNTING DEPARTMENT of the railroad was not the least to be affected by the lack of men due to the demands of war. The question of using women was put aside for the reason that in accounting, especially at the shops, getting the reports in on time, entailed more or less overtime, and we were "tied" by state laws so that we could not work female employees in excess of a certain number of hours each week. It behooved us, therefore, to systematize to the point where we could get a greater amount of work out of the individual without greatly increasing his labor—increase his efficiencey, as it were.

We were all requested to endeavor to systematize, and in this effort the honors fell to the chief accountant at our central shops; it will be my endeavor clearly to describe his plan (which, by the way, has worked out better than we ever dreamed it would) for the benefit of others. There were 4,500 men in these shops with a total pay roll disbursement of $300,000 and a total material disbursement of $410,000. He first considered the foundation of the accounting system, i. e., the daily time slips made out by each employee and the individual material ticket filled in by the gang foreman.

Under the old system the time slips were sorted by shops, then by rates, then by account, then posted in the first distribution, after which the totals were obtained with considerable labor. The same course was followed in the handling of the material tickets. They were priced, turned over to the accounting department, sorted, totaled by lots and posted in the distribution books. The greatest loss of time was suffered through arriving at the totals, this being done by "mental man power" and the first step therefore was in the direction of reducing the time consumed. As an experiment a calculating machine was procured. A junior clerk was put to work on the machine, and the results shortly justified the elimination of an $80 position and the employment of an experienced operator at $55 per month.

The original idea was to use the machine for handling the daily time and material tickets, but step by step the experienced operator took over additional work until at the present time not only these features are covered but all calculations, pro-rata included, are expeditiously handled by machine. As an example, classification of accounts provides that shop expenses (overhead charges) be spread over the various accounts in the individual department where the expense is incurred. As a result we find it necessary at the end of the month to make approximately 4,000 to 5,000 prorations. Calculating machines are now doing this for us, and one need only give this a passing thought to appreciate the efficiency with which machines handle these intricacies of accounting, to say nothing of the reduction in brain fag.

Having systematized the distribution details the next move was to reduce the time put in on the pay-rolls. (Keep in mind the fact that the average number of men handled by this department was 4,500.) This meant that by "man power" it was necessary to write the name, occupation and check number of 4,500 men twice each month.

After casting about for some time the bright idea of an addressing machine was thought of. One was purchased, and in a test case, with an inexperienced operator, this machine in one hour and twenty-five minutes performed work that formerly consumed 50 man hours. The first move after employing a man is to make up a plate (from approved employment application) showing his name, occupation and check number. His service record card is then stamped; a loose leaf time record sheet is next stamped; the time sheet is stamped and the plate is then put in a plate cabinet in its proper place. Thus the name, occupation and check number is always the same on all records.

The progress thus far made did not satisfy our chief accountant. He still felt there was room for improvement, especially on the pay-rolls. The purchase of a pay-roll machine was his next recommendation. Due to his previous success he had little trouble in getting a requisition through. It was necessary that some additional features be incorporated in the standard pay-roll machine in order to meet his requirements, and this was done, with the result that we now turn out our pay-rolls as indicated in the form shown.

As only the one central shop was using the addressing machine the standard form pay-roll sheet is used as it would not have been economy to make a new form to accommodate the one point. It will be noted that occupation is placed on the right of the sheet instead of on the left. The addressing machine takes care of the name, check number (which appears under the caption "line numbers") and the occupation. The pay-roll machine handles all other details on the form. The entire pay-roll is first run through the addressing machine, after which it is turned over to the pay-roll machine operator for listing the time.

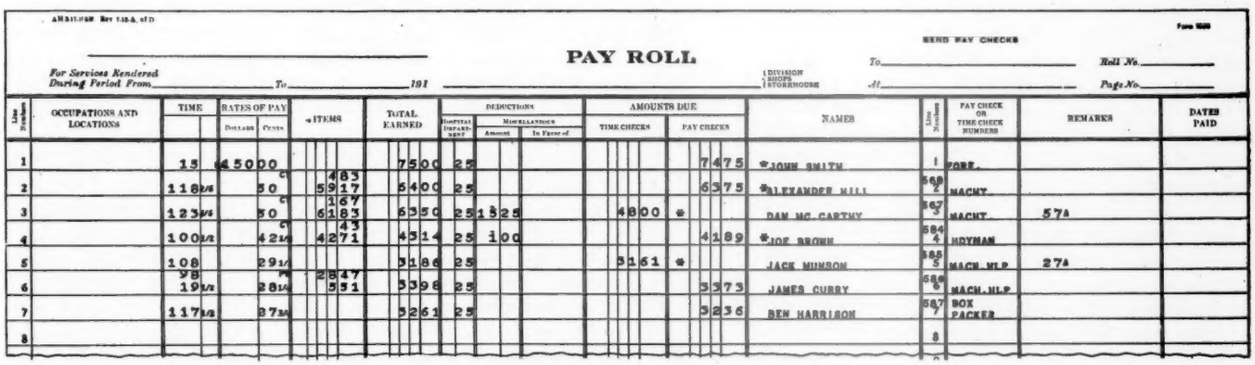
The time-keepers close their time-books, the earnings being determined by use of regular rate tables and the figures appearing in the first four columns are those which have already been determined, but in putting these items through the listing machine the figures are checked; that is, the total items under the caption "items" are automatically derived and printed in the "total earned" column. Next the deductions are set in and the amounts are automatically deducted from the "total earned" and placed in either of the columns "amount due." If time check has been issued the time check numbers are set in the "remark column," as shown on lines 3 and 5. By use of portable stops on the machine the carriage automatically travels from column to column. For example: The first figures in the column are set in, the lever

timekeeper to be in the vicinity of the employees whose time records he maintained. This made it necessary to have a timekeeper in each of the large departments. It was found that the segregation of these men, putting them in one office under the direct supervision of the chief accountant, would be beneficial for two reasons: First, it would keep the men under a direct head at all times; second, it would permit one man helping another in case his particular work was not up to date. The only inconvenience brought about by this segregation was that of having someone watch the check boards at 7:00 a. m., 12:00 noon, 12:30 p. m. and 4:30 p. m. The timekeepers in the various shops took care of this work, and in the rearranged system it was put up to apprentice boys with very good results, as it only took a very few moments at the hours mentioned.

The saving effected by this segregation and the adding machine, plus the addressing machine, is shown in the following list of employees in the department:

	Original Force	Present Force
Main office	1 Chief accountant	1 Chief accountant.
	1 Asst. chief account.	1 Asst. chief accountant.
	3 Asst. accountants.	3 Asst. accountants.
	2 Statement clerks.	2 Statement clerks.
	1 Stenographer.	2 Calculator operators.
	1 Calculator operator.	1 Loco. timekeeper.
Station No. 1	1 Timekeeper.	1 Car timekeeper.
Station No. 2	1 Timekeeper.	1 Lead distribution clk.
	2 Asst. timekeepers.	4 Distribution clerks.
Station No. 3	1 Timekeeper.	1 Clerk.
	1 Asst. timekeeper.	1 Stenographer.
Station No. 4	1 Timekeeper	
	1 Asst. timekeeper.	Total .. 18
Station No. 5	1 Timekeeper.	
	1 Asst. timekeeper.	
Station No. 6	1 Timekeeper.	
Station No. 7	1 Timekeeper.	
	1 Asst. timekeeper.	
Total	22	

By the reduction of five men and the employment of one additional calculating machine operator, a monthly saving



PAY ROLL

For Services Rendered During Period From _____ To _____ 191_

SEND PAY CHECKS To _____ Roll No. _____ At _____ Page No. _____

Line Number	Occupations and Locations	Time	Rates of Pay Dollars	Rates of Pay Cents	Items	Total Earned	Deductions Hospital Department	Deductions Miscellaneous Amount	Deductions Miscellaneous In Favor of	Amounts Due Time Checks	Amounts Due Pay Checks	Names	Line Numbers	Pay Check or Time Check Numbers	Remarks	Dates Paid
1		15	4	50	00	75 00	25				74 75	*JOHN SMITH	1	FORE.		
2		118 1/2		50	4 83 59 17	54 00	25				63 75	*ALEXANDER HILL	2	MACHT		
3		123 1/2		50	1 67 61 83	63 50	25	1 25		48 00 *		DAN MC. CARTHY	3	MACHT	57A	
4		100 1/2		42 1/2	43 42 71	43 14	25	1 00			41 89	*JOE BROWN	4	HOYMAN		
5		108		29 1/2		31 86	25			31 61 *		JACK MUNSON	5	MACH. HLP	27A	
6		98 19 1/2		28 1/2	28 47 5 51	33 98	25				33 73	JAMES CURRY	6	MACH. HLP		
7		117 1/2		27 1/2		32 61	25				32 36	BEN HARRISON	7	BOX PACKER		
8													8			

Pay Roll Form Made Out by Machine

pressed and the carriage moves to the second column, then to the upper portion of the third column, then it moves backward and up one line in order to put the figures in the lower part of column three, etc., until it reaches the end of the line, after which the carriage rolls up one space and travels back to column one. A few seconds to a line are all that is necessary, and after becoming acquainted with the machine the entries are made with much greater speed than by hand.

Attention is called to the special features of the machine which show by abbreviations *DA*, *CT* and *PW*, meaning days, constructive time and piece work, respectively; also to the fractions of 2/6, 4/6, 1/2, 1/4 and 3/4. These hieroglyphics and fractions are special details of the machine included for our special purpose. The ribbons in both machines are copy ribbons and a number of tissue copies can be made.

In its inception the system of keeping time required the

of $340 was effected. The office appliances needed to effect this saving were:

1 pay-roll machine.
2 calculators.
1 addressing machine (including a machine for making plates and one cabinet for filing the plates).

One-half of the annual saving more than pays for the cost of the machines. Added to this is the uniformity in which the work is handled, the neatness, the elimination of errors (so costly in locating) and the fact that not only can the machines be used in the accounting department, but they can and are being used by the numerous other clerks in the same office.

The change from the old to the new system was gradual; a man dropped from time to time and now, eight months from date of inauguration of the system, we find it working out in every detail with absolutely no negative features.

Orders of Regional Directors

GAS MASKS.—A. H. Smith, regional director, Eastern region, in a circular dated March 26, and referring to his circular of a month ago on this subject, advises federal managers that gas masks are not to be used for tunnel and similar work. It appears that some railroad men have worn these masks in tunnels, and have been overcome by smoke or gases, and have with difficulty been resuscitated. C. H. Markham, regional director, Allegheny region, has made a thorough investigation, and concludes that the gas masks which have been investigated are not sufficiently promising to warrant further consideration.

Eastern Freight Inspection Bureau.—The regional directors, Eastern region and Allegheny region, in a circular dated March 25, announce the establishment on April 1 of the Eastern Freight Inspection Bureau, C. C. McCain, manager, 143 Liberty street, New York City, which is a consolidation of the bureaus in Eastern trunk line and Central territories. This bureau will attend to inspection, weighing, demurrage, storage, transit arrangements and other similar work.

Bill-of-Lading Forms.—C. H. Markham, regional director, Allegheny region, by Circular No. 127, sets forth the changes which must be made in the headings of the uniform bill of lading—and in the substitution of "carrier" for "company" in the body of the document—when printing new supplies of blanks. As the Interstate Commerce Commission is to make recommendations concerning the terms to be printed on bills of lading, it is desirable at present to supply only as many blanks as may be needed during four months.

Use of Lock Nuts and Grip Unit Nuts on Boilers.—Order 186 of the Southwestern regional director calls attention to the fact that lock nuts and grip unit nuts are being used on studs which are screwed into boilers, and instructs that hereafter lock nuts and grip unit nuts must not be used in this manner, and that where a lock nut is required a jam nut is to be used.

Light Weighing of Cars.—The Central Western regional director finds that freight cars are not being light weighed within the time specified by Master Car Builders' Rule 30 and calls for observance of this rule.

Routing Via Non-Controlled Roads.—Supplement 1 to Circular 234 of the Central Western regional director states that in some instances freight is being diverted from non-controlled lines on account of the route being unduly circuitous, although there is a reasonably direct route in connection with the non-controlled lines by way of another junction or with other lines under federal control, and instructs that in such cases the non-controlled line should be given a haul by way of the reasonably direct route.

Routing in Connection with Boat Lines.—Circular letter No. 432, issued by the Southern regional director, calls attention to the amendment to the federal control act, contained in the rivers and harbors act, approved March 2, that "No provision of this act shall be construed to prevent the routing of freight by a shipper or consignee over any inland canal or coastwise waterway, or part way over such waterway and part way by rail. In case the shipper or consignee shall so route the freight, no provision of this act shall be construed as giving power to change the routing." The circular says that this provision relates merely to the acceptance of shipper's routing from rail line points in connection with water lines; it does not in any way deal with rates, issuance of bills of lading, and similar matters.

Embargo Regulations.—Circular 75 of the Northwestern regional director outlines regulations for the method of handling embargoes in the Northwestern region under the new plan to be instituted by the Car Service Section on April 1.

Embargo Rules.—The regional director, Eastern Region, by circular 2000-15A642, promulgates the revised rules governing embargoes which went into effect on April 1. Zone embargo committees are to be discontinued as soon as possible. Federal managers and terminal managers are cautioned to issue embargoes only as a last resort, and to see that great care shall be taken to make them as little burdensome as possible.

The regional director authorizes federal directors and terminal managers to issue embargoes, when promptness is necessary, without first asking permission, but the reasons must be promptly telegraphed to him so that he may take any practicable measures to have the embargo cancelled at the earliest possible day.

Maintenance Budget for 1919.—The Eastern regional director, by circular 2700A628, announces that the assistant director of operations will allow until May 1 for the completion of these budgets; but the utmost effort must be made to finish them before that time, and they must be submitted as soon as completed.

Reports from Freight Claim Department.—The Eastern regional director, by circular 1801-126A620, sends to federal managers a form to be used in reporting the work done on loss and damage claims. Each freight claim agent is to make this report for the month of March and for each month thereafter, showing the number of unsettled claims on hand at the beginning of the month, new claims received, claims reopened, claims paid, claims not allowed and claims remaining unsettled at the end of the month; with comparisons with previous periods showing amounts in suspense and amounts realized from sales of unclaimed freight.

No-Accident Month Campaign.—Circular 194 of the Southwestern regional director announces that during the month of May a campaign will be carried on in this region which will be referred to as "no accident month."

Cross Tie Inspection.—Supplement 16 to Northwest Region Purchasing Committee Circular 19, quotes rules issued by the director of the Division of Purchases relative to the responsibility of the exporting railroad for the proper inspection of railroad ties shipped by them to importing railroads.

Payment for Ties.—The Northwestern regional director, in file 113-1-10, quotes a letter from the director of the Division of Purchases which states that railroads are not paying promptly for ties, and that this failure to pay promptly is affecting production. Railroads in the Northwestern region are directed to report on the situation at once to the regional director's office.

Removal of Whiskey Placards.—Circular 196 of the Southwestern regional director calls attention to the fact that shippers of liquors are placarding cars with cards that read "Whiskey" and the firm name. Because of the fact that these placards invite pilferage due to the increased value of liquor and the extension of "dry" territory, their use is now forbidden. Such placards already on cars should be promptly removed.

American Lumber Congress

The first "American Lumber Congress" will be held in Chicago, April 14, 15 and 16, under the auspices of the National Lumber Manufacturers' Association. The question of zone freight rates on lumber, which has been proposed by the Railroad Administration, and the details of which have been entrusted to the Portland (Oregon) District Freight Traffic Committee and J. B. Baird, general traffic manager of the Northern Pacific, will be one of the topics to be discussed. It is proposed by these readjustments in trans-continental lumber rates to simplify the eastbound lumber tariffs, but the lumber men claim that the proposed rates would increase their freight burden a million and a half dollars a year.

Doings of the United States Railroad Administration

Director-General Has Declined to Accept Prices for Steel and Coal Suggested by Industrial Board

WASHINGTON, D. C.

DIRECTOR GENERAL HINES is much concerned over the freight claim situation throughout the country, which was the cause of considerable complaint by representatives of shippers at the recent hearings before the Senate committee, and has brought the matter to the personal attention of the regional directors in a letter asking them to take the matter up with the federal managers in a vigorous effort to clean up the immense number of accumulated claims as well as along the line of prevention.

The matter resolves itself into three aspects, he says, the prevention of loss and damage to freight, the assessment of correct charges, and the prompt disposition of claims for loss and damage and for overcharges. "The need for energetic and sustained effort under each of these three heads is apparent," Mr. Hines says, "but without minimizing the importance of the first two items, the imperative need is to 'clean up' the immense number of accumulated claims. I realize that these matters have already received more or less attention, but to accomplish the results which are absolutely necessary from now on we must maintain an intensive campaign of prevention and prompt disposition of claims." This agrees with what has been said by some of the critics of the Railroad Administration who have claimed also that if the roads had paid their claims more promptly last year the deficit would have been much larger than it was. Each regional director is asked to take action as follows:

1. Take up with each federal manager the necessity of giving immediate attention to both the prevention and the disposition of freight claims and enlist his personal interest in the establishment or perfection of adequate organizations to accomplish these ends.

2. Instruct each federal manager to submit to the regional directors promptly a report as to the steps which he proposes to take to accomplish these purposes, including his organization and his proposed policies and procedure.

3. Instruct each federal manager to submit to the regional directors monthly a report showing as to loss and damage claims the following information covering the month for which report is rendered: (a) number of claims received; (b) number of claims disposed of; (c) number of claims unsettled at end of month. Overcharge claims are now being reported under P. S. & A. Circular No. 60.

4. Send to the director general as promptly as possible copies of the reports submitted by the federal managers together with any additional suggestions and, thereafter, monthly tabulations of the reports, so that the director general may be in a position to give credit where credit is due.

"These matters," Mr. Hines says, "vitally affect the quality of service rendered by the railroads. They are of great importance both because of their effect on our relations with the shipping public and of the conservation of our revenues."

BASIS OF SETTLEMENT OF LOSS AND DAMAGE FREIGHT CLAIMS

At the present time there is lack of uniformity in determining the measure of damages under section 3 of the uniform bill of lading in the adjustment of claims for loss and damage to freight paragraph 2, of section 3, of the uniform bill of lading provides that—

"The amount of any loss or damage for which any carrier is liable should be computed on the basis of the value of the property at the place and time of shipment under this bill of lading, including the freight charges, if paid."

Circular No. 6 issued by the Claims and Property Protection Section says:

It is intended to clear up this situation and to dispose of promptly such claims as come within the rules hereinafter set forth. The following rules shall apply on all unsettled claims under federal control pending decision by the Interstate Commerce Commission in the bill of lading investigation.

RULE 1.—The measure of railroads' liability shall be the value of the property at the place and time the property is received by the carrier for transportation, except where the property is reshipped from the original destination under a new bill of lading, the measure of liability shall be the value of the property at the place and time the new bill of lading is issued.

In either case such value shall be arrived at from the bona fide invoice price, if any, to the consignee, provided the date of the invoice concurs substantially with the date of shipment; and the invoice price to the consignee shall govern, whether the invoice is made by the consignor, the jobber, or wholesaler.

RULE 2.—When claim is filed upon the invoice price of the property delivered at destination, the freight charges shall not again be included in the claim.

RULE 3.—Where property is shipped for sale on consignment from points at which there is no established market value, and where no invoice is made, the measure of railroads' liability shall be the market value of the property at destination at time shipment should arrive, less the transportation charges, cartage and commissions.

RULE 4.—Where the property shipped includes articles, commonly called premiums, which are not included in the invoice, the railroads' liability for such articles shall be the cost price of the articles to the shipper.

CASH AND TRADE DISCOUNT ALLOWANCES

RULE 5.—In the settlement of claims for value of shipments lost or destroyed while in possession of the railroad, the railroad shall receive the benefit of any cash discount or allowance contemplated by the terms of sale to the consignee, provided the claim is paid within the time limit for such discount or allowance.

RULE 6.—When shipments are partially damaged while in possession of the railroad and delivery is taken by the consignee, thus enabling him to obtain benefit of any discount or other allowance, such discount or allowance shall be given the railroad, provided settlement of the claim is made within the time limit for such discount or allowance.

RULE 7.—In case of either loss or damage, the railroad should have the benefit of all trade discounts.

This circular is not in any way intended to establish a liability, but is intended to be used as the basis of settlement when liability has been otherwise established.

CIRCULAR NO. 7

The Claims and Property Protection Section has issued Circular No. 7, prescribing regulations covering the disposition of loss and damage freight claims on fresh meats and packinghouse products.

At the present time there is lack of uniformity in the disposition of loss and damage freight claims presented on carload shipments of fresh meats and packinghouse products. In order to establish certainty and uniformity in the handling of this class of freight claims, the following rules are prescribed:

Rule 1.—All shipments of fresh meats and packinghouse products shall be made under the conditions provided by published tariffs, and bills of lading issued accordingly.

Rule 2.—The agent at loading station shall insert on waybills accompanying cars, instructions as given by shipper on shipping order and bill of lading, and agent at each icing station shall insert on billing, date and time iced and amount of ice and salt used.

Rule 3.—Loss or damage existing at destination at time of unloading must be reported by consignee to railroad agent prior to or during the time of unloading, or as soon thereafter as discovered, and a record kept by consignee of time and date of such notification and name of party notified. Railroad agent

shall inspect the car and make permanent record as to its physical condition, amount of ice in the bunkers after tamping, and the condition of the commodity.

Rule 4.—When the protection given a shipment by the railroad conforms to the shipper's instructions, as provided in published tariffs, and additional icing is properly performed to offset delay and there is no negligence with the railroads, claims for damage will not be paid.

NOTE.—In case of delay, which might be termed unreasonable, all facts presented by shippers shall be given due and proper consideration and claims disposed of upon their merit and in conformity with legal liability.

Rule 5.—One lapse of an hour or two in icing over and above the regular icing schedule, in itself, will not be considered as a basis upon which to pay claims for damage to fresh meats and packinghouse products. However, when this lapse occurs in two or more of the icings, then such facts as presented by the shippers should be given full consideration and claims disposed of upon their merits and in conformity with legal liability.

Rule 6.—Claims for loss or damage to fresh meats and packinghouse products must be supported by a statement of an officer or an authorized representative of the firm presenting the claim. This statement to show the value of the property at place and time of shipment, also the actual amount realized from the sale of such property in a damaged condition. The original account of sales, or a certified copy of same, must be attached to the claim.

Rule 7.—Where property is shipped from points at which there is no established market value and where no invoice is made, the measure of railroad's liability shall be the market value of the property at destination at time shipment should arrive, less the transportation charges, cartage and commissions.

Rule 8.—When the railroad negligently fails to perform its services properly, resulting in damage and a loss is sustained, claims for such loss will be paid or adjusted upon the merits of the case.

These rules shall be applied in their entirety to carload business moving on and after March 15, 1919. They shall also be applied to all unsettled claims on carload business which moved during federal control and prior to March 15, 1919, except that portion of the rules as to the inspection at destination and the statement in substantiation of the claims.

Cases Before Wage Board

Committees representing the shop craft organizations affiliated with the American Federation of Labor and the United Brotherhood of Maintenance of Way Employees and Shopmen are still negotiating with committees of representatives of the regional directors regarding uniform agreements as to rules and working conditions to be applied on all railroads under federal control. The committees in each case consist of 14 representatives of the employees and two representatives of each of the seven regional directors, and they are to submit recommendations to the Board of Wages and Working Conditions which makes recommendations to the director general. The proceedings are confidential until the decision of the director general is announced, but a cartoon published in an official circular issued by the Railway Employees 'Department of the A. F. of L. indicates a belief that an agreement will result in its case at least. It shows Mr. Organized Labor listening outside the door of the conference room and a voice from within says: "I'm on the inside but can't slip you any dope, but you're gonna get an agreement, and when the censor permits I'll have some funny things to tell." The maintenance of way employees also submitted with their proposed rules and working conditions a request for a further increase in wages, but it was declined by the director general and has been withdrawn or postponed by the organization. The Order of Railroad Telegraphers has also presented a similar request which will be given consideration at an early date.

In reply to many inquiries from its members "relative to the delay in the settlement of wage increases" asked of the director general by the shop craft organizations on January 7, the Railway Employees' Department has explained that after having presented its arguments to the wage board on March 12, 13 and 14, its committee was notified that the representatives of the regional directors were not prepared to present their side of the matter, and the hearing was postponed by the board till April 14. The employees committee protested vigorously against this delay, but the board declined to alter its decision. This case is also being presented by 14 representatives of the employees, with B. M. Jewell, acting president of the Railway Employees' Department, as chairman, and 14 representatives of the regional directors, with C. E. Chambers, mechanical assistant to the regional director for the Allegheny region, as chairman.

Back Pay for Short Line Employees

Director General Hines has recently announced a decision that employees of the short line railroads which were not taken under federal control because the general counsel of the Railroad Administration ruled that they were not "systems of transportation," are not entitled to back pay under General Order No. 27, and that employees of railroads relinquished and subsequently taken under federal control are not entitled to back pay for the period back of the date of the contracts subsequently executed. As to the employees who might have been induced to subscribe for Liberty bonds by the appeal sent to all railroad men early last year by Director General McAdoo, calling attention to the fact that they were about to receive increases in wages and back pay, Mr. Hines says that unfortunately these assurances were not restricted, as they ought to have been, to employees of railroads operated by the government, but that there was no intent to mislead any employees, and that those who bought Liberty bonds on the strength of such assurances have only done what every class of citizenship was urged to do; and have made a splendid investment unless they have lost because it became necessary to sell the bonds at a discount.

These conclusions, adhering to the position formerly taken by Mr. McAdoo, were expressed by Mr. Hines in a letter to the chief executives of the organizations representing railway employees, who had asked for back pay for the short line employees back to January 1, 1918. "I am frank to say I do not see any escape from the conclusion that the only procedure practicable in these cases is to begin paying the increased wages only from the date the standard contract taking a short line railroad under federal control is made," said Mr. Hines, "because prior to that time the director general had nothing whatever to do with the expenses of operating the railroads in question and has assumed no responsibility therewith, and has always refused to assume any. The mere fact that these employees purchased bonds of their government to help in the war is not a sufficient reason for the director general assuming responsibility for additional pay to all employees of all short line railroads back to January 1, 1918, in the face of the position he has always taken with the owners of these roads." The letter was not made public, but was communicated to the employees by officers of the organizations.

Disposition of Unclaimed Freight

General Order No. 34-B, issued on March 29, amends General Order No. 34-A to read as follows:

Carriers subject to federal control shall sell at public auction to the highest bidder, without advertisement, carload and less than carload non-perishable freight which has been refused or is unclaimed at destination by consignees after the same has been on hand 60 days. Consignee, as described in the waybilling, shall be notified of arrival of shipments in all cases, and such notice shall contain provisions that after freight is unclaimed or undelivered for 15 days after expiration of free time at destination it will be treated as refused and will be sold without further notice 60 days from date of notice of arrival.

Consignors shall be notified when freight is refused or is

unclaimed, as provided above, when the consignor can be determined from the billing or when shipments are marked with the consignor's name and address; such notice to contain provisions that unless proper orders for disposition are received on or before a specified date, not earlier than 60 days from date of arrival and notice to consignee, the shipment will be sold for charges without further notice.

Perishable freight may be sold in the discretion of the carrier whenever necessary to prevent waste without notice except that such reasonable effort shall be made to notify both consignor and consignee, as described in the waybilling, as the circumstances will permit.

Deposit in the mail of notices in accordance herewith shall be construed as sufficient notice to all concerned, and a record shall be made thereof by the employee who mails the same.

The place of sale of both perishable and non-perishable freight shall be determined by the carrier; the net proceeds, if any, after deducting freight and other legitimate expenses, will be paid to the owner on proof of interest.

Nothing herein contained shall affect the provisions for notice to consignor of unclaimed or refused shipment of explosives or other dangerous articles, or for telegraphic notice to consignors of unclaimed and refused shipments at his expense and on his request, or other special provisions for notice to consignors, where such provisions are contained in the storage rules of the carrier, or other rules contained in tariffs on file with the Interstate Commerce Commission, except that when notice of refusal is given to the consignor under such tariff rules, it shall include the notice of sale after 60 days above provided for, and notice need not be repeated under this order.

Economy in Consumption of Coal in 1918

Good results attained in 1918 as a result of the campaign for fuel economy are shown in a compilation prepared by the Fuel Conservation Section of the Railroad Administration comparing some of the principal statistics relating to the consumption of coal for 1916, 1917 and 1918. The tons of coal consumed in freight service in 1918 amounted to 86,634,345 as compared with 79,454,966 in 1916 and 86,795,339 in 1917, but the pounds of coal per 1,000 gross ton miles show a decrease in 1918 as compared with 1917, although an increase compared with 1916. The amount was 199.7 in 1918, 200.9 in 1917 and 192.1 in 1916. In passenger service the tons of coal consumed in 1918 amounted to 30,570,030 as compared with 32,583,171 in 1917 and 30,494,233 in 1916. The pounds of coal per passenger train car mile used in 1918 averaged 19.3 as compared with 19.4 in 1917 and 18.5 in 1916. In the last six months of 1918 the pounds of coal per 1,000 gross ton miles were only 190.7 as compared with 201.8 in 1917, a decrease of 5.5 per cent, and the pounds per passenger car mile were 18.2 as compared with 18.8, a decrease of 3.2 per cent.

The report also compares the average cost of coal per ton in December, 1918, and December, 1917. The figures for some of the principal roads, which do not include the cost of the haul on the user's rails, are as follows:

Road	December, 1918	December, 1917
New York, New Haven & Hartford	5.78	5.25
Delaware & Hudson	3.99	3.61
Boston & Maine	6.21	5.44
Erie	3.49	3.77
Lehigh Valley	3.62	3.06
Michigan Central	3.78	3.63
New York Central	3.43	3.07
Baltimore & Ohio—Eastern Lines	2.66	2.30
Baltimore & Ohio—Western Lines	2.65	2.30
Pennsylvania Eastern Lines	2.88	2.48
Pennsylvania Western Lines	2.76	2.48
Philadelphia & Reading	3.75	3.51
Atlantic Coast Line	4.25	4.00
Louisville & Nashville	3.13	2.15
Southern	3.48	2.68
Chicago & North Western	3.01	2.19
Chicago, Milwaukee & St. Paul	3.42	2.87
Atchison, Topeka & Santa Fe	3.53	2.97
Southern Pacific	6.02	6.72
Union Pacific	2.77	2.48
Missouri Pacific	3.09	2.51
St. Louis-San Francisco	3.32	2.69

New Embargo Regulations

The Car Service Section, W. C. Kendall, manager, in Circular CS-57 has issued revised regulations regarding the handling of embargoes, effective on April 1, which place the issuance of embargoes under the direction of the regional directors.

A road desiring to place an embargo will notify regional director, specifying what, if any, exceptions are desired. If regional director approves, he will authorize the embargo and transmit it to all federal-controlled roads in his region, to the car service section, and to all regional directors and embargo bureaus interested. Each federal-controlled road will notify its own agents and the non-federal-controlled roads assigned to it. Embargo information will be interchanged with Canadian roads through zone chairmen at Montreal and Winnipeg.

Embargoes and extensions of embargoes must be promptly transmitted by wire, and become effective 24 hours from 11.59 p. m. of the date of issue; freight in transit will be accepted. In the event of strikes, washouts, or similar contingencies the embargo may stipulate that it will become effective immediately.

Each embargo must state the reason why it is placed and be given an identifying number. A telegraphic cipher is prescribed.

Each railroad must have a practical system for filing embargoes which should be uniform at all stations. A complete file of outstanding embargoes must be maintained at all freight loading stations for guidance of shipping public. When necessary to cover more than one kind of freight, each item must be specified.

Freight for export is subject to control of designated committees who are empowered to issue permits authorizing the movement of export shipments against embargoes. For domestic shipments permits may be issued by the car service section, the regional directors and by special committees.

Rules for Issuance of Passes

The Division of Operation has issued Circular No. 19-A, giving revised rules for the issuance of passes, superseding Circular No. 19, dated September 1, 1918, as follows:

Annual and Time Passes

1. The issuance of annual and time passes will be confined to the offices of the director general, director of operation, the several federal managers, the general manager on lines where there is no federal manager, and the federal manager of Pullman car lines.

2. Annual and time passes issued over the facsimile signature of the federal managers (or general managers on lines where there is no federal manager) and countersigned by the person indicated thereon will be limited to—

(a) For, or on account of, their own officers and employees who do not require annual or time transportation on lines beyond their jurisdiction.

(b) For, or on account of, such officers and employees of the corporation as may be specifically authorized by the director general.

(c) To officers and employees of the American Railway Express Company whose duties are confined solely to lines under their jurisdiction.

3. Annual and time sleeping or parlor car passes will be issued by the federal manager of Pullman car lines to officers and employees under his jurisdiction.

4. All annual and time passes not included in paragraphs 2 and 3 will be issued only by the director general or director of operation.

5. Annual passes bearing the personal signature of the director general will be good on all lines under federal control, on all trains, and for seats in railroad-operated parlor or chair cars.

6. Annual and time passes bearing the facsimile signature of the director general will be issued by the director of operation and will be good on all lines under federal control or

within the territory or over the lines specified thereon, and will bear express limitation as to certain trains upon which the pass will not be honored. Such passes will bear the countersignature of W. T. Tyler, director; J. H. Young, senior assistant director; E. H. DeGroot, Jr.; or L. L. Lapp.

7. Annual and time sleeping or parlor car passes, other than for officers and employees of the Pullman Car Lines, and annual and time steamship passes, bearing the facsimile signature of the director general, will be issued by the director of operation with the same countersignature as provided in preceding paragraph.

8. Federal managers, and general managers on lines where there is no federal manager, will forward to the director of operation, on or before November 1, a list of annual or time passes (including sleeping-car or steamship passes), required for officers or employees over lines other than those under their control, indicating the lines or territory over which the passes are desired.

TRIP PASSES

9. Trip passes will be issued over the facsimile signature of the director general or of the federal managers (or of general managers on lines where there is no federal manager) and the federal manager of Pullman car lines, and will be countersigned by the person indicated thereon. Trip passes issued by the federal and general managers and federal manager of Pullman car lines will be limited to the lines under their respective jurisdiction.

10. Trip passes bearing the facsimile signature of the director general, with countersignature of person indicated thereon, will be issued by the director of operation, regional and district directors. Such trip passes will be honored for transportation over the lines indicated thereon.

11. Federal managers, and general managers on lines where there is no federal manager, and the federal manager of Pullman car lines desiring trip passes for, or on account of, their officers or employees over other lines under federal control, will make request for same to the federal or general manager of such railroad in the same manner that exchange trip passes have heretofore been handled.

GENERAL

12. Passes will not be issued which include the privilege of free meals in dining cars, at restaurants, or on steamships.

13. The current regulations of the Interstate Commerce Commission covering the issuance and record of passes must be observed.

Steel Prices to Be Reconsidered

The plan fostered by Secretary Redfield and approved by President Wilson to stabilize prices and stimulate industry by voluntary agreements between the basic industries and the Industrial Board of the Department of Commerce on reduced prices to be paid by the government as an example for other consumers, has encountered a serious obstacle in the refusal of the Railroad Administration to play the part of a self-starter for the scheme. Not only did the Railroad Administration decline to accept the steel prices fixed by the board, but without waiting for the action of the board it allowed the individual railroads to go into the market for coal at the best prices it could get. The result was a conference of various representatives of the government on Wednesday, at which it was decided to re-commit the scale of steel prices agreed upon by the board and the steel interests to the board for further consideration with the Railroad Administration, which has been making an investigation of costs, preliminary to accepting the prices. It is understood that the Railroad Administration has not given its final decision but that it protested against the prices before they were fixed and also against the price-fixing plan; and it is now inclined to hold out for a further reduction.

The scale, which included a price of $45 for Bessemer rails and $47 for open hearth rails was published in last week's issue.

Mr. Redfield and his coadjutors had counted on the Railroad Administration to start the buying movement by making the large purchases that might be expected of the railroads as the largest consumers of steel, coal, lumber, etc., at the prices fixed, and T. C. Powell, director of the Division of Capital Expenditures of the Railroad Administration, was made a member of the board; but apparently the plan was inaugurated without any definite assurance that the administration would consider itself bound by it and the Railroad Administration has been hoping to save some money as compared with its fuel bill for last year, which amounted to approximately $473,000,000 for 180,000,000 tons.

An agreement was reached two weeks ago on reduced prices for rails and other steel products, but the Railroad Administration, forced by the political exigencies that have delayed its appropriation to be conservative in its expenditures, withheld its orders. Therefore, when the board called in representatives of other industries whose prices it proposed to stabilize, including coal, lumber, cement, sand and gravel, they expressed some curiosity as to whether the government would buy at the prices when fixed, particularly after they learned that individual railroads, during the time the coal men were in conference with the board, were asking for bids for coal for the year beginning April 1 without reference to the possible action of the board.

The coal men, after being in conference with the board for two days, withdrew and issued a statement that the Railroad Administration had failed to extend its co-operation, and the sand and gravel people declared that their attitude toward reducing prices would depend somewhat on what the Railroad Administration would do in the direction of reducing freight rates. Director General Hines recently announced that a reduction in rates on road materials when the freight is paid by a government was under consideration, but that it was proposed to ascertain what, if any, reduction in price will be made by those producing and supplying the materials.

The statement issued by the National Coal Association explained that approximately 40 per cent of the bituminous coal is consumed by the railroads and therefore would be purchased by the Railroad Administration. "Under these circumstances," it said, "the operators consider it vital for the board and the industry to know at the outset whether or not the Railroad Administration would accept the decision of the conferences as to prices and make its purchases at those prices. It developed at the meeting that in spite of Director General Hines' publicly announced policy in the purchase of railroad fuel, the Railroad Administration had adopted unfair practices, which would drive the price of railroad fuel below the cost of production. This would necessitate advancing the price of coal for the general consuming public to a point sufficient to absorb the loss involved in the production of coal for railroad use. It was therefore apparent that, unless the Railroad Administration would lend its co-operation and bind itself to accept the findings of the conference, no beneficial results for the general public could be secured. Such assurance of co-operation on the part of the Railroad Administration was not forthcoming. The operators accordingly made clear to the board their readiness to resume the consideration of the question of prices whenever the co-operation and support of the Railroad Administration and other governments buying coal had been secured."

H. B. Spencer, director of the Division of Purchases, denied the statement that the administration had adopted unfair practices. "We have requested the members of this association to bring to the attention of the Railroad Administration any failure to carry out the instructions issued by the director general so that we could investigate the matter and remedy the fault, if any existed," he said. "So far as we are advised, the purchasing departments are absolutely adhering to the policy laid down by Mr. Hines. The Railroad Administration has co-operated to the fullest extent with the National Coal Association."

As a result, the activities of the board were practically suspended for several days. Chairman Peek of the board went to Chicago for a conference with Mr. Hines on Friday, and it is reported that a cablegram was sent to President Wilson on Saturday asking him to instruct the government departments to observe the prices fixed. When Mr. Hines returned to Washington on Wednesday an effort was made to secure an understanding with him as to what the Railroad Administration proposed to do, and a conference was held presided over by the secretary of the treasury and attended by Secretary Redfield, members of the Industrial Board, the War Finance Corporation and representatives of the various government purchasing departments, including Mr. Hines and H. B. Spencer, director of the Division of Purchases. Fuel Administrator Garfield and a representative of the Food Administration were also present but after it had been announced that the Railroad Administration would not accept the steel prices but was holding out for lower prices, there was no particular object in discussing the coal or other prices. The views of the Industrial Board, whose first action has now been repudiated, were expressed by Secretary Redfield, Mr. Peek and other members of the board, while Mr. Hines spoke for the Railroad Administration.

The indications following the meeting were that the board would soon cease to exist unless the President intervenes and that it had to some extent exceeded its authority. It was stated that the original plan was not that the board should fix prices that would be binding on any one but that it was hoped they could induce prices that would be sufficiently attractive to induce buying. It is also stated that the department of justice considers the fixing of minimum prices in violation of the anti trust law.

February Increases Railroad Deficit

The net operating income of the railroads in February again fell short of the standard return guaranteed by the Railroad Administration, according to preliminary returns to the Interstate Commerce Commission, covering about 223,000 miles of operated line. For these roads the net operating income was $9,747,050, a decrease of 0.1 per cent as compared with February, 1918. The total operating revenues amounted to $336,880,496, an increase of 21.7 per cent, showing the effect of the increased rates which have been in effect since last June, as the volume of traffic during the month as measured by net ton miles was 13½ per cent less than for February, 1918. Operating expenses were $310,465,245, an increase of 23.9 per cent.

The standard return for the month of February is about $47,000,000, so that the Railroad Administration's deficit for the month was approximately $37,000,000 on top of a deficit of $35,000,000 as compared with the standard return in January. While the standard return averages approximately $75,000,000 a month, seasonal variations in the volume of traffic are so great that it is inaccurate to compare monthly returns with that figure. The Association of Railway Executives has compiled a table showing what the average monthly return of the carriers in the pre-war test period was, as follows:

January	$55,000,000	July	$76,000,000
February	47,000,000	August	88,000,000
March	68,000,000	September	92,000,000
April	67,000,000	October	95,000,000
May	77,000,000	November	84,000,000
June	83,000,000	December	73,000,000

By quarters, the average net income in the test period compares with the quarterly payment of about $226,000,000, which the government has to make, as follows: First quarter, $170,000,000; second quarter, $227,000,000; third quarter, $256,000,000, and last quarter, $252,000,000. For the first half of the year in the test period the average was $397,000,000, while in the second half it was $507,000,000. These figures are for the Class I roads and the principal switching and terminal companies.

Taking into consideration only the Class I railroads under federal control, the net operating income for 1918 was $688,200,083, which was 77.3 per cent of the standard return. An article recently published in the *Railway Age* gave comparisons of the net operating income of the various roads with their standard return. The percentages of the standard return earned by the railroads in the various regions created by the Railroad Administration were as follows: Eastern region, 69.4 per cent; Allegheny region, 46.4 per cent; Pocahontas region, 101.8 per cent; Southern region, 108.8 per cent; Northwestern, 61.8 per cent; Central Western, 95.4 per cent, and Southwestern, 93 per cent.

Temporary Financing for the Railroads

The War Finance Corporation up to Wednesday had made loans to railroad companies on demand notes at 6 per cent to the amount of $27,700,200, on the security of certificates of indebtedness issued by the Railroad Administration. This represented loans for the purpose of enabling the roads to meet their April 1 requirements. The finance corporation had previously made railroad loans amounting to $116,555,270, including $50,000,000 to the Railroad Administration. The new loans were for 80 per cent of the face of the certificates of indebtedness unless additional collateral was deposited and in making their application for certificates the companies made them for 125 per cent of the amount desired. The certificates bear interest at only 5 per cent, while the loans from the War Finance Corporation bear 6 per cent, but it is understood that an arrangement will be made by which the companies will lose nothing as a result of the difference. Five per cent on the face of certificates issued for 125 per cent of the amount of the advances made by the finance corporation amounts to 6.25 per cent on the face of the loans.

The advances made by the War Finance Corporation were as follows:

Chicago, Burlington & Quincy	$4,000,000
Western Maryland	931,000
Boston & Maine	728,000
Chicago, Rock Island & Pacific	2,800,000
New York Central	2,000,000
Lehigh Valley	2,400,000
Chicago, Milwaukee & St. Paul	1,600,000
Michigan Central	992,000
Chesapeake & Ohio	800,000
Wheeling & Lake Erie	618,800
Cleveland, Cincinnati, Chicago & St. Louis	340,000
Buffalo, Rochester & Pittsburgh	208,800
Lake Erie & Western	62,400
Baltimore & Ohio	6,600,000
Erie	2,500,000
Missouri Pacific	1,120,000

The Baltimore & Ohio received $4,600,000 on the security of a certificate of indebtedness for $5,750,000 and $2,000,000 additional secured by its refunding and general mortgage 6 per cent gold bonds.

In order to meet the increased drafts units resources the War Finance Corporation has issued $200,000,000 of short term bonds at 5 per cent.

Equipment Financing

The plan of issuing trade acceptances to pay for equipment fell through, as announced in last week's issue, largely because of the refusal of the federal reserve banks to rediscount them and also because of the reluctance of the specialty companies to accept them from the equipment companies. The car and locomotive builders who have contracts with the Railroad Administration and who attended the conference with Director General Hines, at which the acceptance plan was proposed, were willing to take them, but proposed to pay the specialty manufacturers with them in turn. The latter, whose contracts were with the equipment builders, although the prices and terms were fixed by the purchasing committee of the Railroad Administration, were not represented at the conference, but were dealt with by the committee of equipment builders, and some of them thought that the equipment companies ought to get the money from the

banks on the acceptances and pay them in cash. This brought up the question of the possibility that the acceptances might have to be renewed at the expiration of 90 days in case the appropriation should not have been passed in that time, and as they were to be secured only by the contingency of the appropriation, the responsibility might be transferred to the endorsers.

The certificates issued to the railroads are not dependent merely upon the appropriation, since they represent money the administraiton has guaranteed to the roads under the standard contracts, and payable "whenever and as soon as the director general shall have funds available . . . whether received by appropriation of the Congress or by virtue of moneys arising out of the use and operation of the railroads . . . or otherwise." The proposed acceptances for equipment were not to be backed by the operating income and were therefore less secure than the certificates upon which the War Finance Corporation will make loans.

Therefore it was decided to try to meet the equipment obligations in some similar way and the subject was discussed at a meeting between the Railroad Administration representatives and the equipment builders at Washington on Tuesday.

Director General Hines, in a speech before the Pittsburgh Chamber of Commerce on March 27, tried to remove any impression that the $750,000,000 appropriation was needed to make up for losses sustained by the Railroad Administration and also to emphasize the fact that it is still needed. He also sought to emphasize that, in the last analysis it is needed to help the railroads finance capital expenditures. He said that after allowing for a $200,000,000 deficit in 1918 the balance of the two appropriations represents money only temporarily tied up as follows: About $340,000,000 for working capital which will be released upon the termination of federal control; $340,000,000 advances to railroads in 1918, which will be returned when they can refinance it, and about $370,000,000 to be advanced to railroads this year pending opportunities to refinance. When the accounts for 1918 are settled, he said, the administration will be carrying additions and betterments which the roads were unable to finance to the amount of $290,918,283, together with long time loans and deferred collections from some of the railroad companies amounting to $151,866,104.

Freight Traffic in February

Freight traffic during the month of February as measured by net ton miles fell off 13.5 per cent as compared with February, 1918, according to the monthly report of freight traffic movement and car performance compiled by the Operating Statistics Section. The net ton miles amounted to 25,681,943, as compared with 29,678,260. This was handled with a decrease of 15 per cent in train miles but the saving in loaded car miles was only 11.3 per cent and the empty car mileage increased 4.5 per cent. The average tonnage per train increased from 618 to 629, or 1.8 per cent, but the tonnage per car fell off 2.5 per cent, from 28.4 to 27.7. The percentage of unserviceable freight cars was about the same as in February, 1918. The car miles per car day declined from 21.6 to 20.3 and the net ton miles per car day from 435 to 379 or 12.9 per cent.

Contracts Executed

The Railroad Administration has executed a standard contract with the Union Freight Railroad for $32,009 and also co-operative short line contracts with the Urcina & North Fork and the White River.

Pointers for the Yardmaster—Be careful in districting your crews. If they are assigned to classification tracks you can usually satisfy yourself as to the extent of their work. At industrial plants, take care that mill foremen do not encourage them to spot around the mill doing an unimportant job under pretense that work is anticipated.—*H. D. McKee.*

Railroad Men*

By T. C. Powell

Director, Division of Capital Expenditures, U. S. Railroad Administration

WE HEAR THE PHRASE, "Railroads operated by the government." The railroads are being operated by railroad men from top to bottom and all the credit and all the blame will be given to railroad men.

When the director general of military railways organized his engineer regiments for service abroad, he hired *railroad* men, and when he wanted to set men to handle the boats and barges on the canals and rivers of France, he cabled over for expert tow-boat men. These railroad men in France got down to brass tacks and built docks and terminals, operated trains and transported men and ammunition like the loyal and enthusiastic railroad men they were and are.

When Commander Buell told of the work of mounting the big guns that bombarded Metz, he said that the trouble was not to get the railroad men to *work*, but to get them to take the necessary rest. They started up before the whistle blew in the morning and kept at it at the rate of 16 to 18 hours per day. And so when General Pershing sent in his report to the secretary of war he felt that the formal commendation of the engineer corps was not enough, but made a separate and special reference to their splendid services.

The first civilian in the history of this country to receive the distinguished service medal of the United States was a railroad man—S. M. Felton, president of the Chicago Great Western. That is the record we have before us.

The public will not be deceived, and any departure from the high standard of which we are capable cannot be blamed on "government operation." It will be blamed on us. You cannot fool your neighbors. The neighboring public knows that the men who are operating the railroads today, from the highest to the lowest, are practically the same men, with only a slight change in personnel, who were operating the railroads two years ago, before the war.

A short time ago I saw a picture which wasn't very much of a picture. There was a fence, and a woman looking through the fence, and a small boy on the pavement outside. The woman was calling—"Violet Marie! Come into the house!" The small boy helped out by calling, "Hey, Carrots, your mother wants you!" We may try to fool the public by calling out "Violet Marie"—otherwise "government operation"—but the public will respond, "Hey, Carrots" —otherwise "railroad men."

I like the military phrase "carry on!" Somehow it expresses vigor and continued forceful action, and if it were not stealing army thunder, I would like to adopt it as our motto. Few of those here actually operate the railroads, but all of us enter into the general scheme. The prompt delivery of a letter may be *the* thing in a day's work.

I never had much sympathy for the man who bet on a horse for "place." If he hasn't the nerve to bet on a horse to *win*, he is simply playing safe, and if our marines had merely played safe on the St. Mihiel salient, where would their honor and glory be, and what would be the status of the war today?

You have all heard of "The Message to Garcia," the story of Andy Rowan, who, in spite of all obstacles, delivered to General Carcia the vital message he was charged with. The account written of it has become a classic, but we have as the head of our organization one who in his early business life carried through with the same promptness and effectiveness the errand with which *he* was charged.

I was told the following story by M. H. Smith, president

*From an address before the Railroad Club of Washington, D. C., February 12, 1919.

of the Louisville & Nashville Railroad. At that time it was reported to Mr. Smith that a bill had been prepared for presentation to Congress, giving the Interstate Commerce Commission extended powers, and which bill, as the report reached Mr. Smith, would have been injurious to the prosperity of the railroads. Mr. Smith felt that it was necessary for him to have a copy of the draft of the bill, and he sent for the general counsel of the railroad to find out if he could make the trip from Louisville to Washington immediately and secure this copy. The general counsel could not spare the time as he was engaged on a lawsuit of a pressing nature, but said that perhaps one of the younger men in his office could do the work as well, and he sent this young man in to President Smith. Before that the two had not met except in a casual way. Sufficient to say that the trip was made; a copy of the bill secured and delivered to Mr. Smith even more promptly than he required.

This was an incident in the career of Walker D. Hines, afterwards vice-president of the Louisville & Nashville, general counsel and chairman of the board of the Santa Fe, and now director general of railroads.

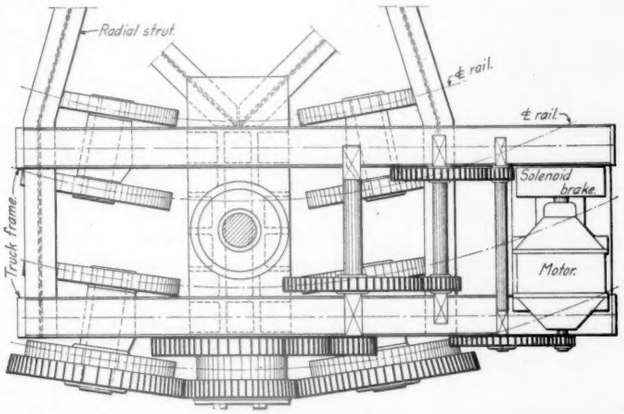
With that example before us, we must "carry on" as railroad men and "deliver the goods."

A Radical Departure in Swing Bridge Design

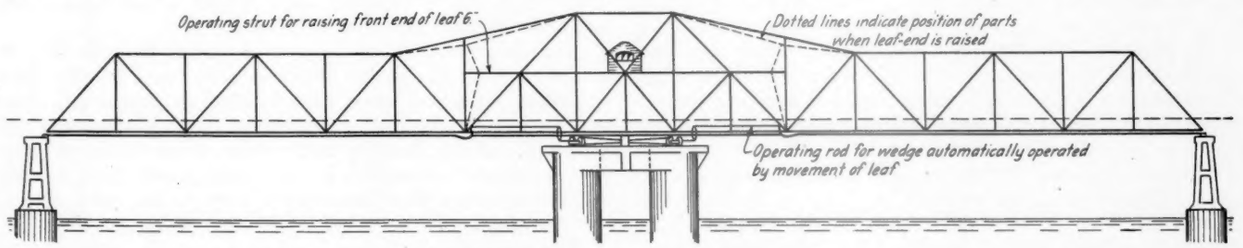
A SWING BRIDGE EMBODYING several radical departures from the designs in common use has been submitted to the consideration of railway men by the Strauss Bascule Bridge Company of Chicago. This design was originated and patented by Joseph B. Strauss, president of this company, some years ago, but had not been offered to the public until the present time. The design is unique in several ways; the truss system, the turning machinery and the means of supporting the span on the pivot pier under both dead and live loading and the method of clearing the end bearings when ready to swing, all embody unusual features.

The truss system consists of a combination of a double cantilever over the pivot pier with semi-suspended simple spans on either side. In place of two simple spans extending from the pivot pier to the end piers and made partially continuous by means of the tower structure over the pivot pier, the two simple spans in this case do not extend over the entire clear distance between the piers, but are supported at an intermediate point at some distance from the pivot pier by the cantilever portion of the span which overhangs the pivot pier on each side. By this arrangement a more economical design of the truss system is obtained. This arrangement also is of considerable importance in connection with the manner of clearing the end piers when swinging. Instead of lowering the end bearings to obtain the necessary deflection for cantilever action of the entire structure, the ends of the spans are lifted clear of the bearings by means of a toggle system in the truss framing. But instead of providing these toggles at the top of the tower as has been done previously, a double toggle system is provided at each end of the cantilever trusses where the semi-suspended spans are supported. As a consequence of this, the load to be lifted is considerably less than if the full half spans had to be lifted, as is the case with the toggles directly above the pivot pier. These toggles are actuated by a set of operating struts provided with racks and extending horizontally from pinions forming a part of the machinery in the operating house.

The most radical departure in the design is the manner of supporting the span on the center pier, both for carrying the traffic and for swinging the span. The span is supported under both conditions at the four corners of the tower, that is, directly under each of the main posts, thus dispensing entirely with loading girders. Under the swinging condition the dead load is carried at each of these points on a truck of either four or eight wheels operating on two to four lines of circle rails. One drawing illustrates the character of these trucks. Each one is attached to the superstructure by means of a center pin, thus allowing considerable independence of movement. Two of the trucks are provided with power machinery for the movement of the span and considerable simplification with respect to this is accomplished by mounting the motor directly on the truck frame, so that it is a simple matter to provide a train of gears from the motor to the wheels. There is thus eliminated the usual circular rack with its difficulty of maintenance.



Trucks Carry the Dead Load When the Span Is in the Swinging Condition


Operating strut for raising front end of leaf 6
Dotted lines indicate position of parts when leaf-end is raised
Operating rod for wedge automatically operated by movement of leaf

General Elevation of the Span

For the closed condition the load is removed from the wheels by means of a simple wedge arrangement directly under the center pin which transmits the load directly into a bearing shoe. The general elevation of the span illustrates one form of substructure applicable to this type of span in which four cylinder piers are provided, one under each point of loading, these piers being connected at the top with a system of reinforced concrete girders to carry the turning track.

Train Accidents in February[1]

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of February, 1919:

COLLISIONS

Date	Road	Place	Kind of accident	Kind of Train	Kil'd	Inj'd
5.	N. Y., N. H. & H..	Danbury	xc	P. & F.	0	20
†24.	L. & Nashville... C. Georgia.....	Sylacauga	xc	F. & P.	1	12
26.	G. R. & I.....	Cadillac	bc	P. & F.	2	20
†28.	Minn. & St. Louis..	Norwood	bc	P. &2F.	2	7

DERAILMENTS

Date	Road	Place	Cause of derailment	Kind of train	Kil'd	Inj'd
4.	Pennsylvania	Birm'ghm, Pa.	d. coupler	F.	0	0
4.	Pennsylvania	Birm'ghm, Pa.	acc. obst.	P.	3	1
†8.	Piedmont & N.....	Chick Spgs.	d. eq.	P.	6	20
8.	West Shore	Jersey City	unx.	F.	3	0
9.	Seaboard A. L.....	Anderson	malice	P.	1	5
14.	Pennsylvania	St. George	b. wheel	P.	0	3
†17.	Pennsylvania	Sturgeon, Pa.	unx.	F. & P.	1	9
*19.	Louisville & N.....	Versailles, Ky.	exc. speed	F.	0	0
†22.	Balt. & Ohio.....	Pittsburgh	neg.	P.	9	10
†23.	Chi., Mil. & St. P...	Latham Park	neg.	P.	2	20

The trains in collision on the fifth were a westbound passenger, running at about 30 miles an hour, and a train consisting of a locomotive and a caboose, which was at a standstill. Both locomotives were thrown off the track. About twenty passengers were injured. The inferior train was on the main track without right, and with no flag protection.

The trains in collision at Sylacauga, Ala., on the 24th were a southbound passenger of the Louisville & Nashville, and a through freight train of the Central of Georgia, the freight train running into the side of the passenger train at the crossing of the two roads. One passenger car was damaged and one passenger was killed. Twelve passengers were injured. The freight approached the crossing at uncontrollable speed in disregard of the law requiring a full stop.

The trains in collision near Norwood, Minn., on the 28th were eastbound passenger train No. 12 and westbound freight No. 417. The westbound train was stalled in a snowdrift and the engine, which had been sent forward to Young America with a part of the train, was returning for the rear portion and had nearly reached it when the collision occurred. Of twelve stockmen riding on the freight, two were killed and seven were injured.

The trains in collision on the Grand Rapids & Indiana near Cadillac, Mich., on the 26th, were northbound passenger No. 5 and southbound freight No. 52. The freight had become stalled in snow and a flagman had been sent forward to stop the passenger train, but his flag was not seen by the engineman. The day was clear but there was some snow blowing in the air. The flagmen threw a fusee at the engine but with no result. The flagman had not used a torpedo, but from the engine of the passenger train the freight was visible at a distance of 1,000 ft. Both engineman and fireman, however, appear to have been working on some part of the engine in the cab and keeping no lookout; and their engine was working when it struck the freight. Both of these men were killed. Twenty passengers were injured. Estimated damage to engines, cars and roadway, $10,000. The engineman is said to have had the reputation of being one of the most careful on the road.

The freight train derailed near Birmingham, Pa., on the 4th was a westbound extra. Three loaded cars were wrecked by the emergency application of the brakes and fell on the eastbound track, derailing eastbound passenger train No. 18. The brake application was caused by a break-in-two, due to the opening of a knuckle, the lock of which had become worn.

The passenger train derailed near Birmingham, Pa., on the night of the 4th was eastbound Chicago mail No. 18. The locomotive fell down a bank and seven baggage cars were thrown off the track. The engineman, fireman and one other employee riding on the locomotive were killed, and one passenger was injured. The cause of the derailment was as noted in the preceding paragraph.

The train derailed near Chick Springs, S. C., on the 8th was a northbound passenger. The rear coach ran off the track on a high trestle and fell to the ground about 90 ft. below. The car was demolished and every person within it was injured. Four were killed outright, two fatally and 20 less seriously injured. The cause of the derailment was the failure of a steel brakebeam which was caught in a guard rail.

The train derailed at Jersey City, N. J., on the night of the 8th, was a northbound yard train of the Lehigh Valley running on the track of the West Shore. The engine was badly damaged and one freight car was wrecked. Three trainmen were killed. The cause of the derailment was not determined.

The train derailed at Anderson, Ga., on the 9th was northbound passenger No. 4. The engine and first three cars were badly damaged. The fireman was killed and the engineman and four other trainmen were injured. The derailment occurred at a switch, believed to have been tampered with.

The train derailed at St. George, Pa., on the 14th was northbound express passenger No. 907. Four coaches ran off the track and 16 passengers were injured. The cause of the derailment was a broken wheel.

The trains involved in the accident on the Pennsylvania Lines near Sturgeon, Pa., on the 17th were a westbound work train and eastbound express passenger No. 114. The tender of the work train (the engine running backward), was derailed and thrown against the side of the passenger train which was moving eastward at full speed on the adjacent track. The sides of nine cars, including three passenger coaches, were badly torn; 10 passengers were injured, one of them fatally. The cause of the derailment of the tender was not determined.

The train derailed near Versailles, Ky., on the 19th was a westbound through freight. Thirteen cars of oil, two cars of coal, and one of coke, were destroyed by fire. The cause of the derailment was excessive speed over a soft spot in track, and an overloaded high hopper dump car. The cause of the fire was not determined.

The trains involved in the accident at Pittsburgh, Pa., on the evening of the 22nd of February were the Versailles local passenger train and a freight locomotive, without train, which was derailed at a point where the track was being repaired, and fell against the passenger train. The passenger train was moving at about 40 miles an hour, and three coaches were wrecked. Nine passengers were killed, and several were injured.

The train derailed near Latham Park, Ill., on the 23rd was a southbound local passenger train. Two persons were killed, a passenger riding in one of the coaches, and G. G. Corcoran, trainmaster of the division; and twenty passengers were injured. Two coaches fell down a bank. The derailment was due to insecure track, shims having been used without sufficient spikes and braces, though an experienced foreman was in charge.

Electric Car Accidents.—Accidents to electric cars—including two cases where locomotives ran into cars at crossings, and one collision on an elevated line in New York City—were reported in February from Terre Haute, Philadelphia, New York City and Cincinnati; but in no case was there any fatal injury. The number of injured, altogether, including serious and minor cases, was 72.

[1]Abbreviations and marks used in Accident List:
rc, Rear collision——bc, Butting collision——xc, Other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction——unx, Unexplained——derail, Open derailing switch—ms, Misplaced switch——acc. obst., Accidental obstruction——malice, Malicious obstruction of track, etc. ——boiler, Explosion of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (including empty engines, work trains, etc.)——Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

Railway Developments in Foreign Countries

The Channel Tunnel Project Excites Discussion in England—Transportation Demoralization in Russia

THE ANNOUNCEMENT by Bonar Law in the House of Commons, March 10, that the British government was considering beginning immediately the construction of the English Channel tunnel (*Railway Age,* March 14, page 611), had an additional factor of importance in the eyes of Englishmen than was given the project at the time in this country. That factor is that this is the first time that the British government has decided in favor of the construction of the channel tunnel in principle. The French government, on the other hand, has been favorable to the tunnel for many years, but in England the fear that the tunnel might be a means of invasion has always ruled against the project.

"There are few subjects on which the policy of British governments has up to now been so consistent as on this," says the London Times editorially. "It was considered and condemned by a committee of both Houses in 1883, and year after year bills were regularly introduced into Parliament, and all were decisively rejected. The Liberal Prime Minister in 1907 made an announcement on the project, based on an exhaustive inquiry by the Committee of Imperial Defence, and it was hostile. A fortnight before the beginning of the war the committee again condemned the project. Since then government spokesmen have several times fenced with proposals, but never a word has been said until yesterday to show that the government had changed their mind. . . .

"The military arguments against the tunnel are very familiar, and there is no need to rehearse them. On the whole our experience in this war has not strengthened them. We should have been better off if there had been a tunnel, for at critical moments we could have reinforced our armies more promptly, and we should have saved a great deal of shipping. German tactics at sea were singularly unenterprising in this war, and in consequence our communications were never seriously threatened. We could never count on having such luck again, and the risk of interruption of our sea communications across Channel must be reckoned as much more serious than the risk of a sudden surprise attack by way of a tunnel that would give the enemy control of the bridgehead on our side of the water. . . ."

The Times, speaking in its news columns of the fact that this is the first time the British government has decided in favor of the construction of the channel tunnel in principle, says that instructions have been issued in this sense to Sir H. Llewellyn Smith and a Board of Trade delegation who are now in Paris examining the question. The Committee of the Peace Conference on which they are serving is considering not only the channel tunnel, but projects for constructing tunnels under the Straits of Gibraltar and the Bosporus.

"As the French government has long been in favor of the channel tunnel, the moment for action seems to be approaching," it continues. "Surveys have recently been made on both sides of the channel, and it is asserted that the construction of the tunnel does not present any exceptional engineering difficulties. The recent falls of cliff between Dover and Folkestone have led to a modification of the original plan. When the tunnel is built its British mouth will be some miles from the coast, and a new railway to make the connection with the existing trunk lines will have to be built. The tunnel will be about 30 miles in length, and the proposal which finds most favor is that two tubes should be built and electric traction used. The cost of the scheme is now put at £20,000,000 ($100,000,000)."

By means of the tunnel London will be put in rail communication with almost all of Europe, except Russia and Spain. It is expected, according to a recent statement by Sir Arthur Fell, M. P., chairman of the House of Commons Channel Tunnel Committee, that construction will take almost five years. Of the total length of 30 miles, 20 miles will be under water. It will be possible to traverse the tunnel in 40 minutes, and the trip from London to Paris on the best trains will require about six hours.

"The tunnel," Sir Arthur Fell said, "would run from a point near Dover to the village of Wissont, between Boulogne and Calais. The railway through it would be electrified. There would be two tubes—one for outward and one for the return journey.

"Each tube would be about 150 ft. under the sea, and it was estimated that without pressure it would be possible to transport in both directions 30,000 passengers and 30,000 tons of goods every 20 hours, leaving four hours a day for repairs, renewals, etc."

Railway Conditions in Mexico

According to information obtained at the general offices of the Southern Pacific Railroad of Mexico, at Empalme, Mex., writes a correspondent, that road is now in regular operation between Nogales and Mazatlan. Train service will soon be re-established to the end of the line just beyond Tepic, it is stated. An enormous amount of rehabilitation work is necessary to bring the road up to the physical standard it was before the long period of revolutionary disturbances began. The company has a claim of $12,000,000 gold for damages to its property pending against the Mexican government. Considerable quantities of steel rails are being imported from the United States for relaying stretches of track.

If the Mexican government revives its former policy of granting concessions for the construction of railroads several important projects of this character will be undertaken by American financial interests when the internal conditions here become more stable, according to advices from the City of Mexico. It is stated that an application has just been made by a syndicate of Americans and Mexicans for a government concession to construct an extensive system of railways in the northern part of Mexico. The proposed line is to follow a route closely paralleling the border between Mexico and the United States, with several branches. It is to run from Ensenada on the west coast of Lower California, to Tia Juana; thence eastward to Mexicali; thence crossing into Arizona just above the head of the Gulf of California; thence south into the state of Sonora, with branch lines to several mining districts and towns; thence eastward along the border into the state of Chihuahua to Juarez, opposite El Paso; thence southeastward to Ojinaga, opposite Presidio, Tex. The main line and branches will be more than 2,000 miles long. The National Chamber of Commerce of Mexico, with headquarters in the City of Mexico, is lending assistance to the project, and it is said that the granting of the application for the concession is practically assured.

If the Mexican government is able to put through its plans for extending the old Mexican International Railroad to the Pacific port of Mazatlan it will have accomplished something that the late Collis P. Huntington, for many years head of the Southern Pacific Railroad, was unsuccessful in

doing, the correspondent adds. Mr. Huntington's failure to carry out the project was due to the inability of expert American engineers to locate a feasible route over the rough range of Sierra Madres that mark an almost impassable barrier between the high plateau and the lowlands bordering the Pacific Ocean. He inspired and built the Mexican International from Eagle Pass, Tex., to Durango, where the rail-head remained because the way to Mazatlan was blocked by the mountains. After the Mexican International passed into government control and became a part of the National Railways of Mexico, a railroad was constructed from Durango to Llano Grande for the primary purpose of affording a transportation outlet for a large area of commercial forest that was owned by José Ives Limantour, who was at that time minister of finance of Mexico. This road is 75 miles long, and is now a part of the government railway system. According to announcement of Engineer Manuel Rodriguez Gutierrez, sub-secretary of the Department of Communications and Public Works of the Carranza government, the route for a proposed extension of the line across the mountains to Mazatlan has been located and construction is now in progress. He says that extensive improvements will also be made to the port of Mazatlan in order to accommodate the prospective increase of railroad traffic and ocean-going shipments.

Railroad Disorganization in Russia

Lack of fuel for locomotives and lack of factories for repairing them are responsible to a considerable extent for the present condition of the railways of Russia, according to a despatch from Stockholm under date of March 20 which is given in a recent issue of Commerce Reports. At the beginning of 1917 the length of the Russian railways was 64,000 versts (42,000 miles); when the government of Kerensky fell (November, 1917), the length of railways in operation had been reduced by 19 per cent. The length of railways in operation and the usable locomotives and cars further decreased under the Bolshevik régime. In October, 1917, the length of railways was 52,000 versts (34,000 miles), the number of locomotives in working order, 15,000, and the number of cars, 520,000; in October, 1918, the length of railways in operation was 22,000 versts (15,000 miles), the number of locomotives in working order was 5,000, and the number of cars 227,000. These latter figures refer only to those portions of Russia under the control of Bolsheviks. At the end of 1918 only 4,500 locomotives were in working order and of these 1,500 are expected to become unfit for use during the current year.

In October, 1917, one locomotive was in good condition for every 3.47 versts (2.3 miles) of railway, one damaged locomotive for every 9.79 versts (6.5 miles), and 10 usable cars per verst. A year later for every 4.4 versts (2.9 miles) there was one locomotive in good condition, one locomotive damaged for every 5 versts (3.3 miles), and 10.3 cars per verst. The percentage of damaged locomotives is growing rapidly and the supply of skilled labor for repair work is decreasing. In 1916, 559 locomotives were repaired; 396 in 1917, and 80 in 1918. Even with this record, it is proposed to repair 700 to 800 in 1919; but it is doubtful whether the figures for 1918 can be exceeded.

Lack of Fuel and Food—Defects of Administration

There is only 1½ months' supply of crude oil at Soromovo, one of the best railway machine works, and the other shops are beginning to use wood. The bread ration given to workmen from July to October in the three most important railway machine shops varied from 2 pounds per person per month to 26 pounds. The condition of semi-starvation partly explains the fact that out of 8,000 locomotives ordered only a few were turned out, as well as 3,500 freight cars, 30 special cars, and 170 passenger cars

There are many reasons for the present deplorable state of the Russian railways. The principal ones are lack of food, fuel, and iron, and added to these is the disorganization in the administration of the railways. The Supreme Council of National Economy is supposed to control all railway questions and the Commissar of Ways and Communications to conduct actual operations; but, in fact, the railways are run practically by the railway men and the railway unions, which have men of small caliber vested with great authority. These organizations, as well as private individuals, have too much to say on questions of railway management. There is no co-ordination between the central and the provincial authorities. There is no central administration, no efficient utilization of usable rolling stock, and no practical distribution system. On some small branch lines with small junctions 40 per cent of the locomotives remain idle and great numbers of cars, with supplies that are most essential for the economic life of the starving country, are sidetracked by local agents. These cars, sometimes unknown to the higher officials, often remain for six months.

Labor Conditions—Railroad Crisis Imminent—Attempts at Improvement

Discipline in labor has decreased enormously. The wages of railway mechanics and laborers are lower than those in any other lines of industry and the result is that the best technical men, specialists, etc., find more profitable work in others of the numerous institutions of the Soviet Government.

It will be seen from the conditions described that unless immediate improvement be made the entire railway traffic of Soviet Russia will be practically at a standstill in a short time.

Realizing the critical condition of railway transportation, the All-Russian Central Executive Committee recently appointed a committee representing all persons actively engaged in railway repair work and railway operations. The question of rolling-stock repairs is to be concentrated in a special department of the Supreme Council of National Economy. These measures are well meant and would accomplish something if carried into effect, but up to the present time the excellent and practical decisions of the cleverest authorities of Soviet Russia remain on paper to a considerable extent.

Railways of Portugal in Poor Repair

Portugal has two state-owned railways, says an item in Commerce Reports, totaling 1,180 kilometers (733 miles) in length, and five privately owned lines with an aggregate trackage of 2,167 kilometers (1,314 miles). General conditions of the railroads in Portugal are bad. Owing to the war, practically no repairs have been made on the roads; part of the rolling stock had to be taken out of service and could not be replaced. Owing to the lack of coal the locomotives mostly use wood for fuel; the service is slow and many trains have had to be suppressed, as, for instance, the Sud express to Paris and the express trains to Spain and Oporto. The passenger and freight rates have been raised several times during the war, amounting on certain lines to 100 per cent over the pre-war tariff. It is expected that when normal conditions return the government and private companies will be able to improve the roads as well as replace and repair the rolling stock, thus restoring more frequent service.

Similar conditions prevail in regard to the railways in the colonies, where government construction enterprises had been provided for by large appropriations, but had to be suspended because of war contingencies.

The most important railways in the colonies are Companhia dos Caminhos de Ferro atravez d'Africa and the state-owned Mossamedes line and Malange line, all in Angola. The traffic on these roads is intensive—large quantities of colonial products being transported from the interior to

the ports—and they are able to handle only a small part of the cargo awaiting shipment. Angola could produce vast quantities of cotton, wheat, corn, cattle and all kinds of colonial products if the railway system were developed. Under the present conditions the transport of the goods from the interior is mostly by river boats and ox-carts. It is planned to connect the railway system of Angola with that of British Central Africa, and by this connection arrange communication between Portuguese West and East Africa.

Russian Railway Commission Sells 6,500 Tons of Rail

The Russian Railway Commission has sold to K. J. Joyce, 32 Nassau street, New York, acting for interests in China, 6,500 tons of rails and accessories which it finds it will not be possible to include in the large shipments of railway material it is now forwarding to Siberia for use by the Stevens commission. In explaining the sale, A. I. Lipetz, who heads the commission in New York, representing the Ministry of Ways Communication of the Provisional (Kerensky) government, issued the following statement:

"Upon consideration of the amount of rails stored in Vladivostok and the available space in steamers from this country to Russia, we have promised to the war department, in order to help the common allied cause, to sell all rails and accessories in excess of the amount needed to be shipped to Russia, and have allotted to the war department a considerable quantity of rails and accessories.

"After the armistice was declared the war department began to return to us unused rails, and has returned up to this time 13,100 tons of rails and accessories; we have, therefore, found it possible to dispose of about 6,500 tons of rails and accessories, which is only a part of the rails returned to us by the war department."

Discussing his statement, Mr. Lipetz also said it was the intention to sell only the rails returned by the war department and that the mission would retain all other supplies in this country in anticipation of successful rehabilitation of the railways in Russia and Siberia. He said that about 20,000 tons of rails remained in storage in Seattle and Vancouver awaiting transportation to Siberia, and that shipments are being made from this total from time to time.

Other property in this country includes about 88 locomotives of an original consignment of 110, about 4,000 freight cars and accessories, making a total weight of more than 60,000 tons and a value of more than $12,000,000. Mr. Lipetz said that all these stores would be retained and shipped to Siberia as soon as ships were available. The United States Shipping Board has agreed to furnish ships for the transportation of these railroad materials to Siberia, as they are needed there, and three vessels have sailed from Seattle since January 1 with locomotives and accessories.

By agreement with the United States Government after the Russian revolution, Mr. Lipetz said, about 150,000 tons of rails and materials and 200 locomotives were turned over to the Allies for military use here and abroad. He added that the rails now being returned by the war department were included in this agreement.

It was the belief of the Russian Railway Mission, Mr. Lipetz said, that when all the rails had been returned there would be a surplus, because shipping would be available in the next few months only for transportation of about 50,000 tons, including the 20,000 tons of rails. If the work in Russia progressed so that more would be needed, he said, the rails could be bought in a few months at lower price. He asserted that the sale of the 6,500 tons of rails had been negotiated at a profit, the price being higher than the present price delivered at Seattle.

The money paid for the rails under the terms of the agreement, Mr. Lipetz said, would be put into the fund of the Russian Embassy in this country. It is estimated that the amount will be nearly half a million dollars.

Discussing the reasons for the sale, Mr. Lipetz denied that it was carried out because of any fear that the Bolshevist government would be recognized or that any other political change was impending. If another Russian government were recognized, he declared, the money on deposit for the Russian government in this country, as well as supplies, would revert to it immediately, so that sales of materials now would withhold nothing from the Soviet régime because the money arising from the sale was to be included in the Embassy fund here.

Belgian Transportation Difficulties

Wrecked factories, lack of materials, and wholly inadequate railway transportation are impeding the work of restoration in Belgium to such an extent that but little activity along this line is yet to be found in that stricken country, says Herbert Samuel, president of the Anglo-Belgian Union, writing in the Times, London. Speaking particularly of the transportation difficulties, he says:

"There are overwhelming difficulties of transport. They impede every measure of industrial revival. Through large tracts of country, railway bridges and culverts have been blown up; the signaling system has been dismantled; the Germans have carried off the connecting hose of the Westinghouse brakes, so that the trains dare not travel at more than a snail's pace; hundreds of Belgian locomotives were withdrawn behind the Army to France at the beginning of the war and have been lent to the French and American military authorities, who have not yet consented to return them; of the few that are still available, a large proportion are in a state of disrepair and continually break down. I was advised that I should find railway traveling impossible, and made my journeys entirely by motor car. On arriving at Charleroi, I was told by the manager of a bank, to whom I had a letter of introduction, that in order to return there that morning from Brussels, a distance of 35 miles, he had been obliged to start at 5.15 a. m. and had not arrived till 11. A railway manager informed me that it had recently taken some of his own officials 14 hours to reach Courtrai from Brussels, a journey of about 50 miles. Although the waterways for the most part are still available, the present condition of the railways is a severe handicap on the restoration of industry, as well as on the distribution of supplies."

French Railway Deficits

Some striking figures as to the three French railways were given recently in a paper read by the head of the financial department of the Paris, Lyons & Mediterranean Railway at a recent meeting of the Statistical Society in Paris. The railways selected were the State, the P. L. M. and the Midi. It appears that in 1917, out of 1,000 fr. of receipts, the expenditure on personnel amounted, respectively, to 469 fr., 216 fr. and 242 fr.; on fuel to 283 fr., 266 fr. and 234 fr. For each 1,000 fr. of receipts the State Railway spent 1,536 fr., the P. L. M. 1,134 fr., and the Midi 1,175 fr., and the deficits for 1917 were 220,500,000 fr., 94,000,000 fr. and 34,000,000 fr. The situation grew so much worse in 1918 that in April the commercial community readily agreed to the raising of the general tariff by 25 per cent. In June the "petite vitesse" tariff was raised 10 per cent. Yet in spite of this rather belated relief the total deficit for 1918 amounted to 1,000,000,000 fr., and in 1919 it is expected to be 1,200,000,000 fr. Presumably the above figures relate to the entire State railway system (i. e., the former Western as well as the earlier State lines), but in any event the State expenditures under both headings are far the highest, and their deficits are the largest. This is considered the more noteworthy, as the State system has advantages which the companies do not possess, that of being able to load its coal at the ports which it serves and being in a position to raise money at less than 2½ per cent.

What Brazil Buys and Sells

The *Railway Age* is in receipt of a booklet issued by the Brazilian Ministry of Agriculture, Industry and Commerce, entitled "What Brazil Buys and Sells." The booklet, printed in English, is intended for circulation in the United States. In its introduction it says that, "It is not an exhaustive manual of information about Brazil, its purpose being rather to place before the American reader the important facts regarding the foreign trade of Brazil, in two distinct periods, namely before and since the beginning of the great war."

The booklet gives details concerning the possibilities of trade between the United States and Brazil, practical suggestions to exporters to Brazil, and information about the country itself, in the way of area and population, finances, railways, shipping, industries, tariffs, consular invoices, etc. Very detailed figures are given concerning the imports into and exports from the country, it being the object of this data to show the possibilities of the Brazilian market.

The figures for imports of railway materials are quoted from the tables in the booklet. It will be noted that even before the war the United States had a large share of the railway supply business in Brazil. The large totals under "other countries" in 1913 refer chiefly to exports from Belgium:

IMPORTS INTO BRAZIL

Merchandise	Unit	United States		United Kingdom		Germany		Other countries		Total imports	
		1913	1917	1913	1917	1913	1917	1913	1917	1913	1917
Sleepers	Tons	.....	.....	.....	.....	.....	.....	690	.....	690	.....
	Dollars	.....	.....	.....	.....	.....	.....	11,000	.....	11,000	.....
Coal	Tons	274,799	642,428	1,927,387	172,866	3,541	.....	56,621	3,033	2,262,348	818,327
	Dollars	2,158,000	19,707,000	16,701,000	4,340,000	56,000	.....	616,000	65,000	19,531,000	24,112,000
Ry. cars and wagons	Tons	25,318	148	9,557	.....	1,665	.....	32,482	2	69,022	150
	Dollars	2,721,000	53,000	2,079,000	.....	178,000	.....	4,211,000	.....	9,189,000	53,000
Axles, wheels and appurtenances for railway cars and wagons	Tons	2,108	3,843	2,937	144	3,372	.....	2,567	27	10,984	4,014
	Dollars	237,000	766,000	441,000	27,000	244,000	.....	280,000	6,000	1,202,000	799,000
Rails, fish plates, and railway accessories	Tons	46,639	5,353	13,928	108	46,859	.....	154,121	66	261,547	5,527
	Dollars	1,959,000	754,000	719,000	22,000	2,021,000	.....	6,546,000	4,000	11,245,000	780,000
Locomotives	Tons	9,204	3,870	750	60	3,148	.....	602	8	13,704	3,938
	Dollars	2,274,000	1,280,000	239,000	12,000	836,000	.....	81,000	6,000	3,430,000	1,298,000

Figures are given in United States dollars.

Railway Repairs Necessary in Egypt

In writing in Commerce Reports on industrial conditions in Egypt, Consul Arthur Garrels, Alexandria, says concerning the railways that they are in need of rehabilitation and expresses his belief that American manufacturers should be able to get considerable of the business necessary for such work.

"The railroads of Egypt," he says, "are state-owned. The road beds, rolling stock and equipment have been taxed to the utmost during the war by the movement of troops and supplies for the various campaigns for which Egypt was the base. Not only have the wear and tear been very extensive, but a great deal of material in actual use on small side lines and sidings has been removed for the use of military lines in belligerent territory. The rehabilitation of the entire railroad system of Egypt will be one of the important works to be undertaken as a part of reconstruction in Egypt. It is believed that the United States could furnish a large proportion of the needed material and equipment, and it is suggested that preliminary correspondence be taken up with Sir George McCauley, K. C. M. G., director general of the Egyptian State Railways, Cairo, Egypt. The unsatisfactory conditions of the railways, however, will in no way hinder the adequate movement of cotton and the supply of the general demand for internal transportation."

Paris-Orient Line to Be Opened May 1

The operation of through trains between Paris and the Orient will begin over part of the line on April 15, and the whole system will be inaugurated by May 1, according to an official statement issued by the Commission on the International Regime of Ports, Waterways and Railways March 26. The statement on the meeting of the commission that day said in part:

"M. Claveille, French Minister of Public Works, reported to the Commission the protocol conveying to the representatives of the interested nations a new transportation agreement, designed to assure relations between England, France and Italy, and to secure a route to the Orient by railroad without passing through territories of the Central Empires. To this end a train de luxe, to be called the 'Simplon-Orient Express,' will be run between Paris and the Orient via Lausanne, Simplon, Milan, Venice, Triest, Laibach, Agram and Vinkovce. At Vinkovce the road will divide, one branch connecting with Bucharest, Constance and Odessa, and the other with Belgrade, Constantinople and Athens. The train will connect at Paris with the London-Calais-Paris train and at Milan with a fast train for Rome.

"Part of this program will be put into operation commencing April 15, and the other part beginning May 1."

Proposed Railway Tunnel Under Shimonoseki Strait

The long-talked-of building of a railway under the waters of the Shimonoseki Strait is at last to be undertaken, according to the Japan Advertiser, issue of December 29, 1918, writes Consul-General George H. Scidmore, Yokohama, Japan, in Commerce Reports. The strait is at present crossed by ferryboats, a method which is inconvenient and results in considerable waste of time. The ferry traffic is, moreover, subject to frequent interruption on account of storms. The railway authorities have, therefore, decided to construct a tunnel 3½ miles in length, one mile of which will be under water, by means of which the towns of Shimonoseki on the mainland and Moji on the island of Kiushu, will be connected by rail. The estimated cost of this undersea railway is 18,000,000 to 20,000,000 yen ($8,973,000 to $9,970,000). The work will take ten years' time and will be in charge of Dr. Tanabe, of the engineering college of the Imperial University, Kyoto.

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GREECE is another country whose railroads need considerable quantities of equipment and supplies to bring them up to their pre-war standard. Consul General Alexander W. Weddell, writing on trade conditions in Greece, says concerning the railroads: No new railways or extensions are now under discussion, but, without doubt, large quantities of material of all kinds will be needed for the rehabilitation of existing lines as soon as deliveries can be effected. In general, conditions of railway traffic are bad, there is a sad lack of fuel, and equipment is worn out; while, because of reduced train service and troop and supply movements, the density of traffic has increased.

* * *

THE FIRST DETACHMENT of American railroad troops destined for work on the Murman Railway has arrived on the Murman coast, according to an Associated Press despatch from Archangel on March 28. Other detachments are expected to follow soon.

What Yardmen Can Do To Save Fuel

AN INTERESTING BULLETIN as to the possibilities of saving fuel has been issued by A. E. West, general yardmaster of the Baltimore & Ohio Western Lines at Hamilton, Ohio, to the men under his jurisdiction. It came as a direct result of an enthusiastic employees' meeting held at Hamilton a short time before, at which the opportunities of the transportation men for saving fuel were thoroughly discussed. The bulletin covers the following points:

1. Agents should get the billing to the yards promptly so that cars coming from the industries can be properly switched and thus save re-handling from the "no bill" tracks to the train yards, and also furnish immediately reconsigning orders on all cars in order to save unnecessary switching.

2. Yard clerks should mark all cars promptly as soon as the bills are received from the agent so that the cars may be properly switched and not lined up as "no bill" cars to be switched again. If yard clerks fail to mark these cars immediately on the receipt of the billing it makes unnecessary switching.

3. Yard crews switching industries and cuts in transportation yards will not train up cars known to be "no bills," nor cars not properly marked even though they are not shown on "no bill" list, as this would cause delay to outbound trains while cars were again cut out of such train, causing loss of time and fuel to both road and yard crew engines.

4. The yard crews and the assistant yardmaster should see that the cars are not "kicked" too hard while switching as this is liable to crack or break the drawheads and the train lines, which might be overlooked by the car inspectors. This would cause a delay to both the train and yard crews in switching the defective cars out of the train and thus cause a waste of fuel.

5. When making up trains care should be taken to see that all couplings are made, and as much of the slack as possible pulled out of the train so that leaks in the train lines can be detected and repaired before the train is ready to go. If the slack is bunched in the train when the inspections are made many of the leaks will be closed and thus will not be detected before the train starts. If this is watched very closely there will be a big saving both in the delay to the train and the cost of fuel.

6. Yard conductors should tell the locomotive engineman as near as they can about the time the engines will go to the roundhouse so that the fireman will not load his firebox with green coal which will be wasted in cleaning the fires. If this is done a large saving of fuel will result.

7. The yard crews before entering upon the main track should consult the despatcher or look at the indicator which is located at each main track switch, and be assured that they are not going to be in the way of any heavy tonnage freight trains. A large amount of fuel is wasted whenever a heavy tonnage freight train is stopped or retarded unnecessarily.

8. When a locomotive is relieved in the train yard, or when any engine is going to the roundhouse, it should be given a clear track if it is possible to do so, as every minute of delay means so many pounds of coal lost.

9. Of two trains leaving a terminal at the same time bound in the same direction, the last one should be given any cars that are to be switched out on the line. If the switching is done by the first train the second one will of necessity be delayed, which means wasted fuel.

10. It has been observed that some firemen make a habit of using a certain number of shovels of coal each time they fire. Now, if the fire is carefully watched and only the amount of coal that is actually needed is fired, at least one shovelful of coal could be saved each time the fire is fixed.

11. Coal should be used as if it belonged to the man using it and he did not know where the next ton was coming from.

12. Everyone should seek to save fuel, and any wastage noted should at once be reported to the general yardmaster's office.

13. To co-operate means good railroading, and good railroading means the saving of fuel.

14. Everyone can do something to save fuel; let us pull together and show our superintendent and his staff that we are going to help and save coal. At the next fuel meeting I want you all to come prepared with a good answer to the question as to what are you doing to save coal.

Experience of French Argument Against Guaranteed Incomes

THE FRENCH POLICY of guaranteeing the income on railroad investments has deadened private initiative and put the railroad problem in France in the forefront of politics, and the same policy, if adopted in this country, may likely result similarly and ultimately bring about government ownership and operation. These are the conclusions reached by Frank H. Fayant, assistant to the chairman of the Association of Railway Executives, in a report which he has made public on the French railways. Mr. Fayant spent some months last year in France, where he was attached to General Pershing's headquarters.

The report follows:

The experience of France with a government guarantee of income on private capital invested in railroads is now of special interest to us because of the proposals recently made in this country for a permanent guarantee from the government when the carriers are returned to their owners.

In studying the French guarantee system these fundamental facts must be kept in mind:

(1) The guarantee of income in France is not a free guarantee, like the war control contract in the United States; it is a loan by the state to the railroad company to make up the amount needed to pay interest, minimum dividends and amortization, and must be repaid out of future earnings.

(2) The guarantee plan was adopted early in the development of the railroads to attract private capital into what was considered a more or less hazardous enterprise, and to bridge the companies over the construction period to the time when they were expected to rise above the need for any help from the state.

(3) Government ownership of all the roads comes automatically at the expiration of the concessions, from 1950 to 1960.

While the guarantee plan has been in operation in France for more than a half century, the contracts now in force date from 1883. The conventions of that year provided:

(a) Six regional monopolies, radiating from Paris.

(b) State participation in the first cost of a number of weak lines to be absorbed by the great companies, and in the construction of certain new lines.

(c) State guaranty of interest and amortization of bonded debt, and guarantee of minimum dividends and amortization of share capital; funds advanced by the state under the guarantee to be loans at 4 per cent to be repaid from future earnings or to be balanced against the rolling stock at the end of the concession, or in case of purchase by the state.

(d) Earnings in excess of the guarantee (after payment of any debt to the state) to go to the shareholders up to a certain level; two-thirds of any excess to go to the state.

(e) At the expiration of the hundred-year concessions (1950-60) the properties to revert to the state, the companies to be paid for their rolling stock and supplies.

(f) The state (after 1898) to have the option of purchasing any system by paying for the rolling stock and supplies, and by paying the company for the remaining years of the concession an annual sum equal to the average net income of the best five out of the preceding seven years.

The expectation was that, after a few years of development, during which time the state would be obliged to advance the companies' funds with which to pay charges on capital not yet yielding a profit, there would follow a period of expanding business and rising earnings that would enable the companies, first, to repay their advances from the public treasury and, later, increase their dividends to the point of profit sharing with the state. It was confidently anticipated that at the end of the concessions the six great lines, developed to the point of perfection under private ownership and operation, would automatically become the property of the state, free of all capital charges, and with such profit-making possibilities that they would provide the funds to meet a large part of the general expenses of the state.

But the results of the French guarantee system have been disappointing. There has been no profit-sharing. The Western, after 44 years' continuous appeal to the state on account of its guarantee, became so hopelessly involved in the treasury finances that the state in 1908 was compelled to exercise its purchase option. Incidentally it has become a greater burden to the treasury under state operation than it was under private operation. The Midi (Southern) in the half century prior to the war, was able in only a dozen years to meet its interest and dividends out of earnings. The Paris-Orleans, which at one time had some hopes of becoming self-supporting, was just before the war making large appeals to the treasury. The Est (Eastern) was self-supporting before the war. The Nord (Northern) and the Paris-Lyon-Méditerranée have always been prosperous and had no need of a guarantee.

State aid in the pioneer days of railroad building in France was of great assistance in providing the capital needed for these enterprises, and in bridging the companies over the early lean years, but in later years the guarantee has only served to entangle the weaker roads in politics and public finance. It has been a handicap to progress and has stunted private initiative. The spirit of the initiative is killed, and there is lowering of operating efficiency.

The war, of course, immediately upset French railway finance. The territory of the Northern and the Eastern was invaded by the enemy, hundreds of miles of line and great quantities of equipment were lost, and these two prosperous companies piled up in the next four years deficits aggregating 650,000,000 francs. The rails of the other companies were not in the war zone, and, after the first shock of war, their business expanded beyond what it had been before the war. Their annual receipts rose to 1,575,000,000 francs in 1917, as compared with 1,378,000,000 in 1913, but the great rise in operating costs absorbed all their new gross and piled up in four years 900,000,000 francs in deficits.

The effect of the war on French railway earnings is shown in the following summary, giving the figures for the prosperous year 1906, the two years immediately before the war, and the four years of the conflict:

FINANCIAL RESULTS OF THE FRENCH RAILWAYS

	Net Earnings	Charges	Deficit
1906	Fr. 771,000,000	722,000,000	49,000,000 (Surplus)
1912	731,000,000	800,000,000	69,000,000
1913	744,000,000	824,000,000	80,000,000
1914	480,000,000	846,000,000	366,000,000
1915	497,000,000	867,000,000	370,000,000
1916	505,000,000	886,000,000	381,000,000
1917	483,000,000	937,000,000	454,000,000

The above figures are for all roads, 5,600 miles of state railways and 18,700 miles of private lines. Taking the reports only for the five private companies, it is seen that, while in 1913 their total debt on account of advances to pay interest and dividends was 636,000,000 francs, at the end of 1917 it had reached 1,400,000,000 francs. This debt of $270,000,000 to the State for guarantee advances is very large when it is considered that these five companies have gross earnings of less than $350,000,000 as compared with $5,000,000,000 for American railroads. It would be the equivalent of upward of two and a half billion dollars for the American roads.

The uneven working of the French guarantee plan before the war made the administration of the railways a continuously discussed political problem, with a constantly recurring agitation for the repurchase of the companies and their operation by the state. The opponents of state operation, of course, pointed to the failure of the state to make any success of its experiment with the Western and urged that what was demanded was not an extension of state meddling in an industry that was being better conducted by the private companies, but a modification in the light of experience of the conventions of 1883. The plight in which all the companies now find themselves, as a result of the heavy burdens of the war, has again placed the railway problem in the forefront of the domestic political questions that France must at once grapple with.

The experience of one country is seldom an unfailing guide for another, because of differences in economic conditions, racial characteristics, and national traditions and ideals, but if in this country we embark on a policy of government guarantee of income on railroad investments, we must do so with our eyes open to the possibilities it invites. If the government directly guaranteed the income on private investments, how long would it be before the government assumed control of the business, especially if the private managements failed to earn the income guaranteed, and the public treasury had to make up the deficit? And would not a guarantee of this character inevitably deaden private initiative?

It is the fear of failure as well as the hope of reward that drives men to do their best: to give insurance against failure is to remove one spur to achievement. If Congress inaugurated such a partnership between the government and private capital, and a large burden eventually fell on the treasury, as has been the case in France, how long would it be before Congress would turn the whole arrangement upside down? Instead of getting the railroads out of politics, would not such a partnership inevitably drag them more deeply into the meshes of partisan struggles? In a word, would not direct guarantee of railroad income inevitably lead to government ownership and operation?

If we are to retain the advantages of private initiative, and save our transportation system and all our machinery of production from the deadening blight of political meddling, we ought to consider well the dangers involved in any proposal for a financial partnership between the railroads and the government. While, before the war our system of public control had its obvious faults, under it was developed the most perfect transportation machine in the world. The best railroads of Europe are many years behind ours in engineering development and operating efficiency. With this achievement before us, should we not attempt to correct the recognized faults in our system of regulation, and build on the sure foundation of the past, rather than enter on an era of political experimenting with new and untried policies? If we are to have a more definite guarantee that capital and brains devoted to the production of transport shall be fairly rewarded, let us find a formula that will not admit of too easy translation into government ownership.

General News Department

W. G. McAdoo, of New York City, former director general of railroads, has been appointed special counsel to the Railroad Administration on matters arising in the state of New York, to serve without pay.

The United States Supreme Court on Monday affirmed a decision of the Court of Claims sustaining a claim of the Union Pacific for payment for the transportation of discharged, retired or furloughed soldiers, military prisoners and applicants for army enlistment at the usual rates of fare. The case arose before the period of government control. The decision holds that such men are not troops entitled to reduced rate on land grant railroads.

Clocks were changed on March 30 by the railways of Canada, to correspond with changes made by their connections in the United States, notwithstanding the decision of the Canadian Government to order no daylight saving this year. Without this change of clocks the Canadian roads would have been obliged to change schedules of trains crossing the border, and of those making important connections at the border. Reports from Ottawa say that the Government has called upon the railroads to explain.

Representatives of railroad commissions in Northwestern states have formed a committee of five to advance as rapidly as possible pending litigation seeking to establish the exclusive right of states to regulate intrastate commerce. Representatives from Iowa, Nebraska, North Dakota, South Dakota, Minnesota, Washington, Oregon and Idaho, gathered in a meeting, have adopted a resolution directing this committee to keep in touch with the progress of all litigation involving the rights of states to prescribe state rates, regulations and charges and to co-operate with all other state commissions and assist any effort of the National Association of Railroad & Public Utilities Commissioners in the prosecution of similar cases. The committee is composed of commissioners from five states: John A. Guiher, Iowa, chairman; Fred W. Putnam, Minnesota; V. E. Wilson, Nebraska; S. J. Aandahl, North Dakota, and J. J. Murphy, South Dakota.

Rates for telegrams have been increased 20 per cent. This increase in domestic commercial telegraph rates, put into effect on April 1, was made by the postmaster general over the protest of the Postal Telegraph Company. The higher rates were declared to be necessary to meet the increased cost of operation occasioned by increases in wages. The rates also apply to government telegrams, but not to press messages, although leased wires are to be charged for at an advance of 20 per cent over existing leased wire rates. Clarence H. Mackay, president of the Postal Company, declares the new rates unwarranted. He says: "The total telegraph business of the country is approximately $80,000,000, and this 20 per cent increase ordered by Mr. Burleson means an increase of $16,000,000 to telegraph users. If we had been allowed to keep our property and operate it we would not have thought of increasing the rates. The real fact is that Mr. Burleson has agreed to pay the Western Union more than he should have agreed to, and in order to realize that amount he has to raise the rates. A second reason is that the Western Union is not administered carefully and economically. Even now, when the government is supposed to be in control of both companies, the Western Union has a horde of solicitors running around trying to get business away from the Postal. These solicitors are as useless as would be solicitors for a street railway. What Mr. Burleson intends to do with the profits which he is taking away from us we do not know. As it is now, the Western Union is ahead of the game, but the public loses $16,000,000 a year, and we lost about $2,000,000 under Mr. Burleson's award to us. If Mr. Burleson will return our lines to us at once we will carry on the telegraph business at the old rates."

Walker D. Hines Visits Chicago

Walker D. Hines, director general of railroads, and party spent Friday, March 28, in Chicago in conference with regional directors and federal managers of the Central West. On Friday evening he was the guest of the Chicago Press Club, where he repeated portions of his speech made at Pittsburgh the night before. R. H. Aishton, regional director of the Northwestern region; Hale Holden, Central Western regional director, and W. T. Tyler, director of the Division of Operation, also addressed the members of the Press Club. Mr. Hines and his party left Chicago the following day, for Atlanta.

Y. M. C. A. Campaign

The Railroad Y. M. C. A. is planning an intensive all the year round campaign among its 300 local railway associations to bring its facilities more directly to railway men and to make the association a more important factor in the community life of railroad towns in which it is working. A "membership drive" will be inaugurated on May 18 and will extend for one week. It has been found that the war has reduced the membership in the Railroad Y. M. C. A. in America from 130,000 to 110,000 and the goal of the May drive will be to bring it up to 150,000. It is proposed that all memberships shall be made to expire on April 30 of each year. This campaign has been developed at recent conferences of association leaders in New York, Philadelphia, Atlanta, St. Louis, Chicago and other places.

U. S. R. A. Before Ohio Courts

General Order No. 18 of the director general of railroads was held invalid as applied to state courts by Common Pleas Judge William E. Duncan, of Ohio, in over ruling a motion to dismiss the case of J. R. Eyestone, against the Cleveland, Cincinnati, Chicago & St. Louis and the Hocking Valley for $515 personal injuries. The plaintiff lives in Wyandot county, where the cause of action arose, but suit was brought in Hancock county. The railroad attorneys cited General Order 18, requiring all suits against carriers while under federal control to be brought in the county or district where the plaintiff resided, or in the county or district where the cause arose. The court held the order invalid as applied to state courts for the reason that its effect would be to suspend operation of a section of the Ohio general code fixing the territorial jurisdiction of the court of common pleas of Ohio and specifying that an action against the railroad company owning or operating a railroad within this state may be brought in any county through or into which such railroad extends. The fact that the accident occurred in 1917, prior to the government taking over the railroads, is believed to have influenced the decision.

State May Purchase Colorado Midland

To prevent the Colorado Midland from being scrapped the government of the State of Colorado is contemplating the purchase of the property. This road traverses the central part of the state, and its principal competitor is the Denver & Rio Grande. Two years ago it was bought at foreclosure for $1,450,000 by interests representing the Porphyry Copper Companies, terminating a receivership. By a system of through routing between eastern and western points, the business of the road had been built up to a point where it was earning a small profit. When the Railroad Administration assumed charge the traffic was diverted to the Denver & Rio Grande with the result that the small monthly profit which the road had been earning was transformed to a deficit which amounted to $750,000 in six months. Upon relinquishment of control by the Government, the copper men, who had invested approximately $2,000,000, started to scrap it as the through business was gone and nothing remained but unprofitable local business.

A bill for the operation of the Denver & Salt Lake (Moffat road) by the state and construction of the James peak tunnel has been passed by the Colorado House of Representatives by vote of 34 to 30.

Conference of Tie Producers

A meeting of the regional vice presidents comprising the board of directors of the National Association of Tie Producers met at the Planters' Hotel, St. Louis, last week, to receive reports from the different tie producing regions and to consider conditions confronting the industry. The Railroad Administration's lack of money is already having its effect upon tie production. Some roads are said to be adopting a policy of forcing loans from the larger tie producers while giving preference to producers who are less able to carry an account. It is felt that the Railroad Administration thus discredits its declaration, made earlier in the year, that large and small producers would be treated alike.

Considerable interest was expressed in the outlook for an export demand for cross ties, some of the producers showing much concern about the inquiry which is now out for 10,000,000 cross ties for British and French railroads. One member of the board of directors of the Tie Producers' Association has also received an inquiry for 2,000,000 ties for export to Italy.

A resolution was adopted authorizing the president of the Association to appoint a committee to confer with the Railroad Administration at Washington.

Valuation Progress

In a statement issued under date of March 11, by Frederick H. Lee, secretary of the Presidents' Conference Committee on the Federal Valuation of the Railroads, there are published abstracts from statements made by Director C. A. Prouty before the Appropriation committee of the House of Representatives on February 3, 1919. In this statement Director Prouty said that the road and track parties in all districts will substantially complete their work this year and that four parties have already been disbanded in the Pacific district and five in the Southern district. The land and the field accounting work will be completed in about two years, while the office work will be completed in about three years.

The complete engineering, accounting and land reports for the Boston & Maine system have been received, while the director stated that similar reports had been completed for the Rock Island. It is estimated that the division will receive completed reports from the engineering section on 50,000 miles of road during 1919, similar reports having been received on 25,000 miles of road up to January 1 of this year. The inventory of the Western Union properties has been practically completed while the most important part of the inventory of the Postal Telegraph properties will be completed in about six months. Work is just about to begin on the properties of the American Telephone & Telegraph Company. Up to December 31, 1918, $13,706,197 had been expended by the Federal Valuation Department, of which $13,206,831 had been expended on the valuation of the railroads. The Commission has authorized the appointment of about 1,525 men and the average force of the Division of Valuation during 1918 was about 1,325 men.

Preparations for Railroad Legislation

Representative John J. Esch, the next chairman of the House Committee on Interstate and Foreign Commerce is making preparations for beginning active consideration of proposed railroad legislation as soon as Congress is called in extra session, which it is now believed in many quarters will be by June 1. Mr. Esch's views, in a general way, correspond to the plan suggested by the Interstate Commerce Commission before the Senate Committee. He wants the roads returned to their owners as soon as legislation can be provided and he has also discussed the idea of including legislation for the future regulation of telegraph and telephone lines and of motor truck freight routes. He proposes to hold a series of hearings.

Representatives of the organized railroad employees, headed by the officers of the train service brotherhoods and of the Railroad Department of the American Federation of Labor, who have joined hands, are planning an active campaign to exert their influence on the proposed legislation and it is reported that headquarters will shortly be opened in Washington for the purpose of carrying on their propaganda under the direction of Glenn E. Plumb, counsel for the brotherhoods. A bill to carry out the provisions of the so-called Plumb plan of government ownership is being drafted and will be supported by the organizations, but it is understood that if congressional sentiment against government ownership appears too strong they will demand, as a minimum, representation for labor on the Interstate Commerce Commission or whatever body is put in control of the railroads.

Organization of the American Welding Society

The first meeting of the American Welding Society was held on March 2, 1919, at the Engineering Societies building, 33 West 39th street, New York, and the constitution and by-laws were adopted as recommended by the Organization Committee. The outline of the organization, its aims and activities, and the qualification requirements for members were published in the March 14, 1919, issue of the *Railway Age*. The following officers were elected:

President—C. A. Adams, President American Institute of Electrical Engineers, Cambridge, Mass.
Vice-President (for 1 year)—J. M. Moorehead, Union Carbide Company, New York.
Vice-President (for 2 years)—G. L. Brunner, Brunner Manufacturing Company, Utica, N. Y.
Directors for 1 year—
W. M. Beard, Linde Air Products Company, New York.
M. H. Roberts, Air Reduction Sales Company, New York.
M. M. Smith, Commercial Acetylene Company, New York.
L. D. Lovekin, American International Ship Building Corp., Philadelphia, Pa.
Alexander Churchward, Wilson Welders and Metal Company, New York.
W. H. Patterson, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa.
Walter J. Jones, Chester Shipbuilding Company, Philadelphia, Pa.
C. A. McCune, Page Steel & Wire Company, New York.
Directors for 2 years—
R. R. Browning, Oxweld Acetylene Company, New York.
A. S. Kinsey, Professor of Experimental Mechanics, Stevens Institute, New Jersey, N. J.
Victor Mauck, John Wood Manufacturing Company, Conshohocken, Pa.
E. L. Hirt, Bethlehem Shipbuilding Corporation, South Bethlehem, Pa.
J. F. Lincoln, Lincoln Electric Company, Cleveland, Ohio.
H. M. Hobart, General Electric Company, Schenectady, N. Y.
D. C. Alexander, Quasi Arc Weldtrode Company, New York.
H. R. Swartley, Jr., Davis-Bournonville Company, Jersey City, N. J.
Directors for 3 years—
L. H. Davis, Linde Air Products Company, New York.
E. L. Mills, Air Reduction Sales Company, New York.
D. B. Rushmore, General Electric Company, Schenectady, N. Y.
James Burke, Burke Electric Company, Erie, Pa.
D. H. Wilson, Jr., Wilson Welders & Metal Company, New York.
Hermann Lemp, General Electric Company, Erie, Pa.
C. J. Nyquist, Torchweld Company, Chicago, Ill.
Alexander Jenkins, Alexander Milburn Company, Baltimore, Md.

It was voted that the charter should be held open for ten days, and that those applying for membership in the American Welding Society before April 8 should be considered charter members.

At a meeting of the directors in the afternoon, W. E. Symons, Galena Signal Oil Company, Franklin, Pa., was appointed treasurer, and H. C. Forbes, consulting engineer, New York City, was appointed secretary.

American Gear Manufacturers' Association

The annual convention of the American Gear Manufacturers' Association will be held at the Hotel Statler, Cleveland, Ohio, April 14, 15 and 16.

The organization includes in its membership representative companies engaged in making gears in the United States and Canada. For some years past it has been striving to effect an organization that would develop definite means for standardizing products. The coming convention will center its attention on this problem.

Papers will be presented as follows:

(1) "Gear Steels," by Dr. Parker, of the Carpenter Steel Company.

(2) "Proper Sizes and Materials for Gears."

(3) "Worms and Worm Wheels," by a representative of the Timken-Detroit Axle Company.

Officers of the association are: President, F. W. Sinram, of the Van Dorn & Dutton Company, Cleveland, Ohio; vice-

president, H. E. Eberhardt, of the Newark Gear Cutting Machine Company, Newark, N. J.; secretary, Frank D. Hamlin, of the Earle Gear & Machine Company, Philadelphia, Pa., and treasurer, Frank Horsburgh, of the Horsburgh & Scott Company, Cleveland, Ohio.

American Foundrymen's Association

The 1919 convention and exhibit of the American Foundrymen's Association will be held in Philadelphia, Pa., from September 29 to October 4. It is planned to make this convention an international one and invitations will be sent to foundrymen and industrial engineers all over the world. Details of the program will be announced later.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—F. M. Nellis, 165 Broadway, New York City. Next convention, May 6-8, 1919, Chicago.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—E. H. Thayer, St. Louis-San Francisco R. R., St. Louis, Mo.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—J. E. Quick, Port Huron, Mich.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Union Station, St. Louis, Mo.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—F. C. J. Dell, 50 E. 42nd St., New York.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—Otto E. Schlinck, 485 W. 5th St., Peru, Ind.

AMERICAN RAILROAD ASSOCIATION.—J. E. Fairbanks, 75 Church St., New York.—
- Operating Section (including former activities of Association of Railway Telegraph Superintendents and Railway Storekeepers' Association).
- Engineering Section (including former activities of Railway Signal Association).
- Mechanical Section (including former activities of Master Car Builders' and Master Mechanics' Association).
- Traffic Section (including former activities of Freight Claim Association).
- Transportation Section (including former activities of Association of Transportation and Car Accounting Officers).

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Austin Station, Chicago. Next convention, October 21-23, 1919, Cleveland, O.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 910 Michigan Ave., Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION (see American Railroad Association, Mechanical Section).—Acting Secretary, V. R. Hawthorne, 735 Transportation Bldg., Chicago. Next annual convention, June 23-25, 1919, Atlantic City, N. J.

AMERICAN RAILWAY PERISHABLE FREIGHT ASSOCIATION.—E. F. McPike, 135 E. 11th Place, Chicago. Regular meetings, 2d Wednesday in March and September.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 6202 Greenwood Ave., Chicago.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick,, University of Pennsylvania, Philadelphia, Pa. Next meetiag, June, 1919, Atlantic City, N. J.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Charles W. Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, 708 Union Trust Bldg., Washington, D. C.

AMERICAN TRAIN DESPATCHERS' ASSOCIATION.—D. L. Darling, Northern Pacific Ry., Spokane, Wash. Next convention, June 17-20, Hotel La Salle, Chicago.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md.

ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS.—George W. Lyndon, 1214 McCormick Bldg., Chicago. Semi-annual meeting with Master Car Builders' Association.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, C. R. R. of N. J., Jersey City, N. J.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Next meeting, October, 1919, Chicago.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS (see American Railroad Association, Operating Section).—W. L. Connelly, N. Y. C. R. R., Gibson, Ind.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS (see American Railroad Association, Transportation Section).—G. P. Conard, 75 Church St., New York.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—M. J. Trees, Chicago Bridge & Iron Company, Chicago. Next annual convention, October 21-23, 1919, Cleveland, O.

CANADIAN RAILWAY CLUB.—James Powell, 46 Aberdeen Ave., St. Lambert (near Montreal), Que. Next meeting, 2d Tuesday in May, 1919, Windsor Hotel, Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawler Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November, and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. R. McMunn, New York Central, New York.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, Lehon Company, 45th and Oakley Sts., Chicago.

EASTERN RAILROAD ASSOCIATION.—D. G. Stuart, Washington, D. C. Next annual meeting, May 8, 1919, Railroad Club, New York.

FREIGHT CLAIM ASSOCIATION (see American Railroad Association, Traffic Section).—Lewis Pilcher, R. F. & P., Richmond, Va.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 856, Insurance Exchange Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, B. & O., Lima, O.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago. Next meeting, May 19-22, 1919, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha Ave., Winona, Minn.

MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION.—F. W. Hager, 1323 Hurley Ave., Ft. Worth, Tex. Next annual convention, October 21-23, 1919, St. Louis, Mo.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Next meeting, May 26-29, 1919, Hotel Sherman, Chicago.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Next meeting, September, 1919, Chicago.

MASTER CAR BUILDERS' ASSOCIATION (see American Railroad Association, Mechanical Section).—Acting Secretary, V. R. Hawthorne, 746 Transportation Bldg., Chicago. Next annual meeting, June 18-21, Atlantic City, N. J.

NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES' COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Next annual convention, October 14, 1919, Indianapolis, Ind.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York. Next convention, April 24-26, Congress Hotel, Chicago.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Kelly-Derby Co., Peoples Gas Bldg., Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting months of June, July, August and September.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—George A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Regular meetings, 3d Tuesday in each month, Tenjost Hall, Buffalo, N. Y.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Bldg., Washington, D. C. Next annual meeting, June 11, 1919, Hotel Commodore, New York.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month except June, July and August, Colonial Annex Hotel, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—D. C. Welty, Missouri Pacific R. R., St. Louis, Mo.

RAILWAY ELECTRIC SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—D. L. Eubank, Galena Signal Oil Company, Richmond, Va. Next annual meeting, September, 1919, Hotel Sherman, Chicago.

RAILWAY FIRE PROTECTION ASSOCIATION.—G. L. Ball, St. Louis-San Francisco Ry., St. Louis, Mo.

RAILWAY REAL ESTATE ASSOCIATION.—James P. Nelson, President, C. & O., Richmond, Va.

RAILWAY SIGNAL ASSOCIATION (see American Railroad Association, Engineering Section).—H. S. Balliet, Ass't Terminal Manager, Grand Central Terminal, New York. Stated meeting, on Monday, before 3d Tuesday in March, Chicago.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, N. Y. C. R. R., Box C, Collinwood, Ohio.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Next annual meeting, June 18-25, 1919, Atlantic City, N. J.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Co., 30 Church St., New York.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next annual convention, September 16-18, 1919, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack, Rockland County, New York.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry., of Ala., Atlanta, Ga.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—C. N. Thulin, Duff Manufacturing Company, 935 Peoples Gas Bldg., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Next annual convention, September 16-18, 1919, Auditorium Hotel, Chicago.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, O. Next annual meeting, September, 1919, Hotel Sherman, Chicago.

WESTERN ASSOCIATION OF SHORT LINE RAILROADS.—Clarence M. Oddie, Mills Bldg., San Francisco.

WESTERN RAILWAY CLUB.—A. F. Steubing, 750 Transportation Bldg., Chicago. Regular meetings 3d Monday in month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except July and August.

Traffic News

Territorial and district freight traffic committees will hereafter make monthly reports to Washington of the subjects which they have on their dockets.

A traffic association has been organized in connection with the Massillon (Ohio) Chamber of Commerce. The president is S. S. Swaney; secretary, M. L. Underwood.

A bill has been introduced in the Illinois legislature to give railroads the right to grant transportation privileges in exchange for advertising space in newspapers or magazines.

Export rates on cotton via the Pacific coast ports will not be reduced below the basis established by the last 15 per cent increase. A delegation of representatives of the coast cities asked the Railroad Administration to establish a lower rate but was told that the 15 per cent increase must be maintained.

With the reopening of the season of lake navigation the Railroad Administration has announced its decision to establish differential freight rates by lake and rail. Compared with the pre-war situation the differentials will be somewhat smaller and the territories of origin and destination somewhat modified.

Manufacturers of Illinois represented by the Illinois District Traffic League and the Illinois Manufacturers' Association are planning to contest any attempt of the Railroad Administration to take control of Illinois intrastate freight rates from the Public Utilities Commission. The controversy has grown out of the complaint of Indiana shippers regarding Illinois intrastate rates. Thomas E. Demcy, chairman of the Public Utilities Commission has asked that the Illinois shippers be heard by the Western Freight Traffic Committee before any action is taken to put in effect, in Illinois, Central Freight Association class rates and official classifications.

At the annual election of the Traffic Club of Chicago, held in the club rooms on March 25, Carl Howe, traffic manager of the Michigan Central, was elected president; E. L. Dalton, traffic manager of Montgomery Ward & Co., first vice-president; William Gourlay, general agent of the American Railway Express Company, second vice-president; Captain A. Fletcher Marsh, secretary of the Marsh & Truman Lumber Company, third vice-president; C. B. Singer, freight representative of the Nickel Plate of Chicago, secretary; and J. F. Coykendall, federal treasurer of the Chicago Great Western, treasurer. The directors elected for two years were J. H. Brinkerhoff, terminal manager of the Chicago District; C. G. Burnham, federal manager of the Chicago, Burlington & Quincy; Charles Deitrich, freight claim agent of the Chicago, Milwaukee & St. Paul; Robert C. Ross, traffic manager of Joseph T. Ryerson & Sons; and Luther M. Walters, commerce counsel for Morris & Co.

Ohio State Industrial Traffic League

The Ohio State Industrial Traffic League was permanently organized at Columbus, Ohio, on March 24. A temporary organization was created several months ago for the purpose of considering interstate transportation problems until a permanent organization could be perfected. The officers of the new organization are: President, F. H. Baer, traffic commissioner of the Cleveland Chamber of Commerce; first vice-president, Guy L. Cory, manager of the Springfield Traffic Association; second vice-president, H. D. Rhodehouse, traffic commissioner of the Youngstown Chamber of Commerce; secretary, J. G. Young, traffic commissioner of the Columbus Chamber of Commerce; treasurer, L. G. Macomber, traffic commissioner of the Toledo Commerce Club.

POINTS FOR THE YARDMASTER.—If you are not an operator at least learn the office call; this will enable you to know when to tell your operator to get busy. * * * See that your clerks keep the office in a thoroughly clean and neat condition; desks and drawers should be entirely free from books and papers that are of no current interest. File closed records and papers methodically in a convenient place, but out of the way, and do not allow useless junk to accumulate.—*H. D. McKee.*

Commission and Court News

United States Supreme Court

Taxation of Leasehold Interests

The Supreme Court of the United States has reversed the judgment of the Supreme Court of Georgia, refusing an injunction sought by the Central of Georgia against the collection of certain taxes upon the leasehold interests in the roads leased from the Augusta & Savannah and the Southwestern, which by the charters of the lessors were to be taxed only in a certain way and to a certain amount. The leases were for 101 years, renewable in like periods on the same terms forever. It was argued that if the leases produce a profit in excess of the rental the value is required by the state Constitution to be taxed. But the United States Supreme Court holds that the Constitution, being subsequent to the charters that created the exemption, must yield to them if they apply to the present attempt. The court adopted the reasoning in the case of Wright v. Central of Georgia, 236 U. S. 674, where an attempt to tax the real estate, roadbed and franchise value of the two lessors was held unconstitutional. Central of Georgia v. Wright. Decided February 3, 1919.

Necessity for Notice of Claim for Damage to Live Stock

In an action for damages sustained en route by cattle carried from St. Louis, Mo., to Georgetown, Ky., the railroad in defense set up non-compliance with a provision in the bill of lading requiring claims to be made in writing, verified by affidavit, to the company's general freight agent at Cincinnati. This averment was not denied; but the shipper replied that he promptly advised the agent at Georgetown of all essential facts and maintained that the requirement in respect of written notice to the general freight agent had been waived. The Kentucky Court of Appeals affirmed judgment for the shipper.

The point involved has been discussed in recent opinions of the United States Supreme Court and it finds nothing which takes this case out of the rule requiring compliance with a provision in a bill of lading like this. (St. L. I. M. & So. v. Starbird, 243 U. S. 592; Southern Pacific v. Stewart, decided January 13, 1919). The judgment below was therefore reversed. B. & O. v. Leach. Decided March 10, 1919.

State Taxation of Interstate Commerce Cars

The Supreme Court of the United States, in an appeal by a tank line from tax assessments in Georgia, was called upon to consider the power of a state to lay and collect taxes upon instrumentalities of interstate commerce.

The Union Tank Line has never carried on business or had an office in Georgia. It owns 12,000 oil tank cars, which it rents to shippers. The roads over which the cars move also pay therefor stipulated compensation. Under contract the Standard Oil Company of Kentucky ran certain of these cars into Georgia. They were not permanently within that state, but passed "in and out." The Tank Line for 1913 made a tax return of an average of 57 cars in the state during the year, at a value of $47,310. The Comptroller General assessed the company's property for the year at $291,196. The company contested the validity of the assessment. The trial court adjudged the assessment good. The Supreme Court has now reversed that judgment for the following reasons:

A state may not tax property belonging to a foreign corporation which has never come within its borders—to do so under any formula would violate the due process clause of the Fourteenth Amendment. Insofar, however, as movables are regularly and habitually used and employed therein, they may be taxed by the state according to their fair value along with other property subject to its jurisdiction, although devoted to interstate commerce. While the valuation must be just it need not be limited to mere worth of the articles considered separately, but may include as well "the intangible

value due to what we have called the organic relation of the property in the state to the whole system." How to appraise them fairly when the tangibles constitute part of a going concern operating in many states often presents grave difficulties; and absolute accuracy is generally impossible. The Supreme Court has accordingly sustained methods of appraisement producing results approximately correct—for example, the mileage basis in case of a telegraph company, and the average amount of property habitually brought in and carried out by a car company. But if the plan pursued is arbitrary and the consequent valuation grossly excessive it must be condemned because of conflict with the commerce clause or the Fourteenth Amendment or both.

In the present case the Comptroller General made no effort to assess according to real value or otherwise than upon the ratio which miles of railroad in Georgia over which the cars moved bore to total mileage so traversed in all states. Real values—the essential aim—of property within a state, cannot, it is held, be ascertained with even approximate accuracy by such process; the rule adopted has no necessary relation thereto. During a year two or three cars might pass over every mile of railroad in one state while hundreds constantly employed in another moved over lines of less total length. The court considered the company's property was appraised according to an arbitrary method which produced results wholly unreasonable, and that to permit the enforcement of the proposed tax would deprive it of property without due process of law and also unduly burden interstate commerce. Justices Pitney, Brandeis and Clarke dissented. Union Tank Line vs. Wright. Decided March 24, 1919.

Terminals and Hours of Service Act

The Supreme Court of the United States holds that an independent freight terminal may be a common carrier and subject to the Hours of Service Act.

In proceedings in the Federal District Court for the Eastern District of New York against the Brooklyn Eastern District Terminal for alleged violation of the Hours of Service Act, the defendant contended that it was not a common carrier; that it was not engaged in interstate commerce by railroad; and that its employees were not "connected with the movement of any train." Upon facts which were agreed the trial court entered judgment for the Government. The Circuit Court of Appeals reversed the judgment on the ground that, while the Terminal was engaged in interstate commerce and the employment in question was connected with the movement of trains, it was not a common carrier. (239. Fed. 287.)

The substantial question before the Supreme Court was whether the Terminal was within the scope of the act, as being a common carrier. The court held that it was. In no respect does the service actually performed by the Terminal for or in respect to shippers differ from that performed by the railroad companies at their other stations. True, the service is performed by the Terminal under contracts with the railroad companies as agent for them and not on its own account. But a common carrier does not cease to be such merely because the services which it renders to the public are performed as agent for another. The relation of connecting carriers with the initial carrier is frequently that of agent. The relation of agency may preclude contractual obligations to the shippers, but it cannot change the obligations of the carrier concerning the physical operation of the railroad under the Hours of Service Act, which as the Supreme Court has said, must be liberally construed to secure the safety of employees and the public. (A., T. & S. F. v. U. S., 244 U. S., 336.)

It is now admitted that the Terminal is engaged in interstate commerce; and it is held clear that at least "switching crews" engaged in moving at one time a locomotive with seven or eight cars between the docks and the warehouses or team tracks, a distance of nearly a mile, are engaged in the movement of a "train." Those decisions under the Safety Appliance Acts, which do not support this view, depend upon the particular context in which the word "train" there occurs, and are held not applicable here. United States v. Brooklyn Eastern District Terminal. Decided March 24, 1919.

Equipment and Supplies

Certificates of Indebtedness to Supply Companies

A telephone message from Washington, just as we are going to press, advises that Director General Hines has entered into an agreement with the equipment companies to issue certificates of indebtedness similar to those issued to the railroads and for the amounts now due. It is understood that these certificates may be used as collateral on loans from the banks.

Standard Locomotive Deliveries for Week Ended March 22

The following new locomotives were shipped to railroads under federal control during the week ended March 22:

Works	Road	Number	Type
American	A. C. L.	4	USRA Pacific
	C. of G.	2	Mallet
	C. & Nw.	4	USRA 6W. Sw.
	C. & Nw.	1	Mikado
	C. St. P. M. & O.	4	USRA Mikado
	Erie R. R.	5	USRA St. Fe
	G. N.	4	USRA Mikado
	Penn. L. W.	3	Santa Fe
	Penn. L. W.	7	USRA S. Fe
	T. & P.	4	USRA 6W. Sw.
		38	
Lima	L. & N.	1	USRA Mikado
		1	
Baldwin	C. B. & Q.	3	Mikado
	P. & L. E.	6	USRA Mikado
	Ill. Cent.	1	Mikado
	P. R. R.	1	Mikado
	P. & R.	1	Mallet
	A. T. & S. Fe.	1	Mikado
	G. N.	2	8W. Sw.
	C. C. & O.	1	Mikado
	L. V.	1	Pacific
		17	
	Total	56	

Standard Car Deliveries to March 22

The following new standard cars were accepted during the week ended March 22:

Road	Number	Type	Manufacturer	Total accepted for given roads
C. C. & O.	38	50 Ton S. S. Box	Bettendorf Co.	162
N. Y. C.	83	50 Ton S. S. Box	Haskell & Barker	1,000
Sou. Pac.	49	50 Ton S. S. Box	Haskell & Barker	49
N. & W.	364	50 Ton S. S. Box	Pullman Car Co.	400
L. & N.	21	50 Ton Comp. Gon.	Am. Car & Fdy. Co.	150
N. Y. C.	98	70 Ton L. S. Gon.	Pressed St. Car Co.	443
Total	653			

Locomotives

THE SOUTH MANCHURIAN RAILWAYS have ordered 26 Decapod locomotives from the American Locomotive Company. These locomotives will have 23 by 28 in. cylinders, and a total weight in working order of 202,000 lb.

THE KAIJAMA MINING COMPANY, China, has ordered two 6-wheel switching locomotives from the American Locomotive Company. These locomotives will have 12 by 18 in. cylinders, and a total weight in working order of 60,000 lb.

Freight Cars

THE WORTHINGTON PUMP & MACHINERY CORPORATION, Cudahy, Wis., is inquiring for 25 scoop ore cars.

Passenger Cars

THE CANADIAN NATIONAL RAILWAYS are inquiring for a private car.

Supply Trade News

The American Blower Company, Detroit, Mich., has purchased a plot of ground containing approximately 15 acres upon which it intends to build a new plant. Plans are now being prepared for the construction of a foundry upon which work will be started in the near future.

Frederick G. Zimmerman, assistant secretary of Harry Vissering & Company and the Okadee Company of Chicago, has been appointed secretary, to succeed **Marshall E. Keig,** who has resigned to accept the office of assistant to the president of the Consumers Company at Chicago.

Frank Walsh Haskell, president of the Carborundum Company, Niagara Falls, New York, died April 2 at his winter home at Daytona, Fla. Mr. Haskell was born in Brooklyn, New York, in 1861, and was educated in the schools there and in Bloomfield, N. J. He was for a time in railroad service as a rodman in the engineer corps, which laid out the Chicago, St. Paul, Minneapolis & Omaha. In 1885 he moved to Pittsburgh and there affiliated himself with Henry C. Frick as secretary and treasurer of the Southwest Connelsville Coke Company, owned jointly by the Frick and Illinois Steel Companies. In 1897 he moved to Niagara Falls, representing the Mellon interests of Pittsburgh, and becoming president of the Carborundum Company, then in its infancy. This company under his leadership became the greatest abrasive manufacturing concern in the world. It is not generally known that at the request of H. C. Frick and E. H. Harriman in 1905 Mr. Haskell made the investigation of the Equitable Life Assurance Society, which later brought before the public the disclosure resulting in the entire change in the method of life insurance business in the United States. The Armstrong and Hughes Investigating Committees, so-called, were the subsequent results, their facts being largely based on Mr. Haskell's masterly accomplishment.

F. W. Haskell

The Chicago Pneumatic Tool Company has discontinued its branch office at Wichita, Kan., and has transferred the stock from that place to Eldorado, Kan., where an office and warehouse have been established. A new office has also been opened by the company at Tulsa, Okla.

The Firth Sterling Steel Company, McKeesport, Pa., announces the removal of its New York and Boston warehouses to new quarters. The New York warehouse will henceforth be at 310 Hudson street and the Boston warehouse at 35 Oliver street. The latter was previously occupied by the company from 1873 to 1914.

I. H. Cohn, formerly of the **National Steel Rail Company,** has become associated with the Standard Rail & Steel Company, St. Louis, Mo., and will be in complete charge of the rail department, handling all matters relative to relaying rails and railroad equipment. The company's plant of 15 acres in Madison, Ill., is now nearing completion.

Lieut. Joseph P. Schneider, who for the past nine months has been on duty with the Railway Transportation Corps, U. S. A., as railway transportation officer with headquarters at Paris, France, has received his honorable release from the service and has resumed his duties as Western office assistant with the Locomotive Superheater Company at Chicago.

C. F. Massey, president of the **Massey Concrete Products Corporation,** Chicago, has been elected chairman of the Board of Directors of that company, and **J. S. Hobson,** western manager of the **Union Switch & Signal Company,** at Chicago, has been elected president of the Massey Concrete Products Corporation, to succeed Mr. Massey. Mr. Hobson will retain his position with the Union Switch & Signal Company.

Samuel T. Fulton, vice-president of the **Railway Steel Spring Company,** died in New York, March 29, at the age of 52 years. He was born in Topeka, Kan., and spent many years in railroad service in the west, becoming assistant to the president of the Chicago, Rock Island & Pacific Railroad in 1904. He resigned in 1909 to become associated with the Railway Steel Spring Company.

Lieut.-Colonel Merrill G. Baker has been elected president of the **American International Steel Corporation,** effective April 1. Colonel Baker was formerly assistant manager of sales of the Cambria Steel Company and has been for many years one of J. Leonard Replogle's right hand men. He succeeds the late Edward M. Hagar, who died over a year ago. The American International Steel Corporation is a subsidiary of the American International Corporation.

The Onondaga Steel Company, Inc., Syracuse, N. Y., announces the addition to its board of directors of Morton D. Whitford, treasurer of the Semet-Solvay Company, and Charles H. Canfield, general auditor of the Onondaga Steel Company. The company is planning to remove its offices and remaining furnace and melting equipment this spring from its original plant in Syracuse to a large tract of land recently acquired at Eastwood on the outskirts of Syracuse, and plans have been made for the immediate construction of a large temporary office building and an addition to the main building, 40 ft. by 40 ft., which will house the blacksmith shop and the small hammer shop.

Elected President of Westinghouse Air Brake Co.

At the annual meeting of the stockholders of the **Westinghouse Air Brake Company,** held Monday at the general office of the company in Wilmerding, Pa., **A. L. Humphrey,** who has been vice-president and general manager of the company since 1909, was elected president, succeeding John F. Miller. This action was taken at the solicitation of Mr. Miller, who after a service of thirty years, during which period he rose from the position of real estate agent for the company to its highest executive office, is desirous of being relieved of some of the active duties in the management of the air brake interests. He will remain, however, a member of the board of directors of the company and hold the position of vice-chairman of the board, with H. H. Westinghouse as chairman.

A. L. Humphrey

Mr. Humphrey has been connected with the Westinghouse Air Brake Company since 1903 when he was appointed western manager with headquarters at Chicago. He was born in Buffalo, New York, and his family moved to Iowa when he was less than a year old. At the age of 14 after the usual amount of country schooling he struck out for himself and engaged in various occupations. At the age of 22 he organized a general machine shop and foundry in Seattle which afterwards became the present Moran Iron Works. He then entered railroad service and became constructing division foreman of the Mojave division of the Cen-

tral Pacific, then master mechanic and later superintendent of motive power of the Colorado Midland. At about this time he took an active part in politics and was twice elected to the Colorado House of Representatives and during his second term served as speaker of the House. He then went back to railroad service on the Colorado & Southern in 1899 and went to the Chicago & Alton in 1903 as superintendent of motive power, soon after which he was appointed western manager of the Westinghouse Air Brake Company at Chicago. He went to Pittsburgh in 1905 as general manager of the air brake works, and was elected a director of the company in 1909 when he was also given the dual position of vice-president and general manager, which he has held ever since. When the Union Switch & Signal Company was taken over by the air brake company in 1916, Mr. Humphrey was also elected president of that corporation. In addition he has been active in an executive capacity in all the other interests associated with the Westinghouse Air Brake Company, such as the Locomotive Stoker Company, Pittsburgh; the National Brake and Electric Company, Milwaukee; the American Brake Company, St. Louis, and the Westinghouse Pacific Coast Brake Company, San Francisco.

During the war the companies of which Mr. Humphrey is in charge accepted from the British and Russian governments, contracts for the manufacture of shrapnel and explosive shells as well as time fuses numbering approximately four to six million units and component parts of war material, involving the expenditure of about $20,000,000 which contracts had to be completed in a specified time. Mr. Humphrey not only put up factory buildings, installed special machinery and created an entirely new and separate organization for the construction of this work, but he also finished the job on time without having a single piece rejected. When the United States entered the war Mr. Humphrey received for the Union Switch & Signal Company a contract to produce 4,100 aeroplane engines of the Le Rhone type. Besides his activity as a manufacturer, Mr. Humphrey also acted in a consulting and advisory capacity to the government in Washington on many committees and boards. He was industrial "staff expert" for Brigadier General C. C. Williams, chief of the Ordnance Department, he was a member of the committee on Labor of the Council of National Defense, as well as a member of the War Industries Board and the War Resources Committee in Washington.

He is president of the Employers' Association of Pittsburgh and a director of the Chamber of Commerce.

Besides the election of a president, the stockholders also completed the regular business of the annual meeting Monday by electing the following board of directors: Ben V. Becker, James D. Callery, E. M. Herr, A. L. Humphrey, John F. Miller, John R. McCune, John R. McGinley, Charles McKnight, M. S. Rosenwald, W. D. Uptegraff and H. H. Westinghouse.

American Steel Foundries

R. P. Lamont, president of the American Steel Foundries Company, in a statement to stockholders explaining the proposal of the company to issue $25,000,000 of 7 per cent, cumulative, non-voting preferred stock and the cutting of the par value of the common stock in three, increasing the number of shares proportionately, presents some interesting financial history of the company. The statement, in part, says:

"In 1908 in the recapitalization and readjustment of the securities, the net worth of this company was placed at $17,184,000. Since then over $2,000,000 has been spent on fixed properties, after ample allowance for depreciation, and the capacity of the plants has been increased over 30 per cent. Bonds to the extent of $3,398,913.68 have been paid off; the outstanding debentures have been reduced from $3,436,800 to $1,372,800; the working capital has increased from $4,799,546.02 to $10,547,593.64—all resulting in an increase in net worth of about $13,000,000. The undivided surplus has increased $7,182,845.75.

"The annual net earnings of the company for the past seven years are as follows:

1912	profit	$962,000
1913	"	1,490,000
1914	"	241,000
1915	"	264,000
1916	"	3,969,000
1917	"	5,532,000
1918	"	2,696,000

"With this condition of the company's resources and earnings, it is deemed wise and essential to take means looking to the enlargement, development and diversification of the activities and products of the company, the stabilization of its earnings, and as nearly as may be freed from the vicissitudes and fluctuations heretofore experienced, as also to steady and strengthen its standing in the security market; and to that end the company be enabled, if the occasion arises, to acquire other properties and means making for a prompt realization of this purpose."

The change in the capitalization will be acted upon at a meeting of the stockholders in Jersey City, N. J., on April 22. According to Mr. Lamont's statement the change is being made in order to afford an opportunity to acquire other properties. It is believed that the smaller units of common stock will stimulate and encourage the buying of shares by small investors and particularly by employees of the company.

Westinghouse Air Brake Company

As a change has been made in the fiscal year of the Westinghouse Air Brake Company to correspond with the calendar year, the figures given in the report for 1918 cover a period of 17 months. The additional fact that earnings of the Union Switch & Signal Company, now owned by the Air Brake company, are included in the Air Brake's statement, makes it impossible to compare earnings and expenses with previous years.

The net profits of the Union Switch & Signal Company for 12 months and of all other companies for 17 months, less taxes, aggregated $7,461,900. Deducting Westinghouse Air Brake dividends paid during this period leaves balance to surplus account of $2,384,923.

Federal taxes paid for the calendar year 1917 by all companies, including the Union Switch & Signal, totaled $549,638. For the year 1918, the liability set up to cover estimated federal taxes of the same companies amounts to $2,250,000, an increase of over 325 per cent.

Haskell & Barker Car Company

The net earnings of the Haskell & Barker Car Company for the fiscal year ended January 31, 1918, as published in its annual report show a substantial gain compared with the preceding year, before making allowances for federal taxes. However, after tax reductions and reserve for renewals, the amount left available for dividends totaled $1,366,916, equal to $6.21 a share on the 220,000 shares of stock, as compared with $1,599,743, equal to $7.27 a share, the previous year. The gross earnings for the year ending January 31, 1918, were $4,409,210, an increase of $1,775,017 as compared with the previous year. Edward S. Cary, president of the company, in his statement to the stockholders, said: "The industrial situation in this country is deeply involved in uncertainty due to transition from intensive war time production to peace time pursuits and the equipment business is further affected by the uncertainty that surrounds the railroad situation. This company is particularly fortunate, however, in having business on its books approximating $30,000,000 to tide it over the period of reconstruction. Due to various causes the railroads have not kept their equipment up to standard and it is only a question of time till normal conditions return and the equipment business comes into its own."

The company's balance sheet is as follows:

BALANCE SHEET

Current assets	$11,077,520
Property and plant account	5,222,596
	$16,300,116
LIABILITIES	
Current liabilities, taxes, etc.	$2,083,761
Reserves: For renewals and replacements	653,078
Capital and surplus	$13,563,277
	$16,300,116

Trade Publications

AIR TRANSPORT SYSTEM.—The Quigley Furnace Specialties Company, New York, has developed a system of carrying pulverized fuel which differs from screw conveyor and high pressure blast systems in that the fuel is transported in bulk from

the pulverizing plant through small diameter standard wrought iron or steel pipe by compressed air to bins at the furnace, without the use of return piping. This system and the various apparatus used for the transport, distribution and burning of the fuel are described and shown in a diagrammatic drawing in bulletin No. 11, containing 14 pages.

TIME ZONES.—A large calendar and wall map of the United States and the greater part of Canada, 28 in. by 40 in., is being issued by the Metal & Thermit Corporation, New York, the map showing the new railroad time zones in the United States, which went into effect on January 1, 1919.

ROLLER BEARINGS.—The distinctive features, together with price lists for the different sizes of its type "C" roller bearings, which are recommended for use under conditions of medium loads at medium speeds, such as inspection cars, baggage trucks, etc., are set forth in bulletin No. 1004, issued by the American Roller Bearing Company, Pittsburgh, Pa.

CREOSOTE OIL.—The Barrett Company, New York, has issued a 16-page booklet with the sub-title "When and How to Use Barrett Carbosota Grade-One Liquid Creosote Oil." Two pages are devoted to a description and detailed plan of a simple and inexpensive wooden treating plant and several photographs of home made plants are shown. The booklet includes full directions for the application of creosote oil and its various uses are treated of in detail, special attention being given to the treatment of poles and fence posts.

Railway Financial News

BOSTON & MAINE.—The Massachusetts Public Service Commission has voted approval of the proposed reorganization of this company, and has authorized the issuance of $13,306,000 of bonds to fund the outstanding notes.

Judge Morton on March 26 authorized the receiver to accept from the director general certificates of indebtedness amounting to approximately $919,416, or such part thereof as he may be willing to issue, and to apply to the war finance corporation for an advance of $735,532 needed to meet payments coming due. The receiver was also authorized to issue notes for the advance and pledge the certificates as security, as well as other securities which may be required.

CANADIAN PACIFIC.—See editorial comment elsewhere in this issue.

ERIE.—The New Jersey Public Utility Commission has approved the application of this company for authority to pledge $8,372,000 of its series D bonds, issued under its general mortgage of April 1, 1903, as collateral security for a proposed issue of its three-year 6 per cent collateral gold notes to the amount of $15,000,000.

Canadian Pacific Railway Company—Thirty-Eighth Annual Report

DIRECTORS OF THE CANADIAN PACIFIC RAILWAY COMPANY.
YEAR ENDED DECEMBER 31ST, 1918.

To the Shareholders:

The accounts of the Company for the year ended December 31st, 1918, show the following results:—

Gross Earnings		$157,537,698.05
Working Expenses		123,035,310.38
Net Earnings		$34,502,387.67
Deduct Fixed Charges		10,177,512.98
Surplus		$24,324,874.69
Contribution to Pension Fund		500,000.00
		$23,824,874.69
Deduct Net Earnings of Commercial Telegraph, January and February, transferred to Special Income Account		193,976.64
		$23,630,898.05
From this there has been charged a half-yearly dividend on Preference Stock of 2 per cent., paid October 1st, 1918	$1,613,638.42	
And three quarterly dividends on Ordinary Stock of 1¾ per cent. each, paid June 29th, 1918, October 1st, 1918, and December 31st, 1918	13,650,000.00	
		15,263,638.42
		$8,367.259.63
From this there has been declared a second half-yearly dividend on Preference Stock, payable April 1st, 1919	$1,613,638.42	
And a fourth quarterly dividend on Ordinary Stock of 1¾ per cent., payable April 1st, 1919	4,550,000.00	
		6,163,638.42
Leaving net surplus for the year (which amount has been placed in reserve to meet special taxes imposed by the Dominion Government)		$2,203,621.21

In addition to the above dividends on Ordinary Stock, three per cent. was paid from Special Income.

SPECIAL INCOME FOR YEAR ENDED DECEMBER 31st, 1918.

Balance at December 31st, 1917	$15,785,750.86	
Less: Dividend paid April 1st, 1918	1,950,000.00	
		$13,835,750.86
Net Revenue from Investments and Available Resources, Exhibit "C"		1,928,483.50
Interest on Deposits, and Interest and Dividends on Other Securities		2,779,854.22
Net Earnings Ocean and Coastal Steamship Lines		1,214,869.22
Net Earnings Commercial Telegraph and News Department, Rentals and Miscellaneous		2,205,544.57
		$21,964,502.37
Less: Payments to Shareholders in dividends: June 29th, 1918, October 1st, 1918, and December 31st, 1918		5,850,000.00
		$16,114,502.37
From this a dividend has been declared payable April 1st, 1919		$1,950,000.00

2. The working expenses for the year amounted to 78.10 per cent. of the gross earnings, and the net earnings to 21.90 per cent., as compared with 69.46 and 30.54 per cent., respectively, in 1917.

3. There were no sales during the year of Four per cent. Consolidated Debenture Stock, Four per cent. Preference Stock, or other Capital Securities.

4. In consequence of the provisions of the Order of the Governor-General-in-Council passed in March of last year, imposing Special Taxes upon the Company, the net surplus from railway operations for the year has been placed in reserve to meet such special taxes, and a notation to that effect appears in the accounts.

5. The sales of agricultural land in the year were 842,191 acres for $15,375,996, being an average of $18.25 per acre. Included in this area were 64,424 acres of irrigated land which brought $42.94 per acre, so that the average price of the balance was $16.22 per acre.

6. Pursuant to the policy adopted by your Directors in 1916 one hundred farms for returned soldiers were prepared for occupation and qualified men have already been placed on a number of them. In the opinion of your Directors it is desirable that the Company should continue, as conditions warrant, the preparation of farms and the sale of them on favorable terms to soldiers who have served in the Canadian or Imperial Forces and to Canadians who have served in the Allied Armies.

7. At the outbreak of hostilities your Company had in commission in Atlantic and Pacific service 38 steamers, with an aggregate gross tonnage of 342,000 tons. Since August, 1914, the construction of 4 steamers previously authorized, having a gross tonnage of 54,000 tons, has been completed, and 12 steamers of 69,000 gross tonnage have, in the same period, been purchased. During the war 15 steamers were lost by enemy action or through accidents at sea, and 9 have been sold to the British Admiralty after having been requisitioned. The construction at the yards of the Fairfield Shipbuilding Company of a ship 625 feet in length between perpendiculars, having a gross tonnage of 21,000 tons, is to be proceeded with pursuant to the authorization previously given, and three passenger ships of what is known as the intermediate class, for Atlantic service, two of which have been previously authorized, will be put under construction as soon as possible at the yards of John Brown & Son and the Fairfield Shipbuilding Company. At the end of the fiscal year your Company had in ocean service 28 steamers having a gross tonnage of 264,000 tons, and 6 steamers under order or purchased but not delivered having a gross tonnage of about 80,000 tons. On their delivery the total tonnage of the fleet will be slightly in excess of aggregate tonnage of the vessels in commission on 3rd August, 1914.

8. In May of last year, in consequence of the demands for increases in wages made to the Railroad Administration of the United States, substantial increases in all wage scales on American Lines were authorized, and were accompanied by increases in freight and passenger rates. Demands for wage increases were likewise made in Canada, and, by Orders-in-Council passed under the War Measures Act in July last what is known as the McAdoo Scale of Wages was made effective in Canada, and increases in freight rates generally similar to those granted in the United States were made effective on all Canadian railways.

9. There will be submitted for your consideration and approval a lease of the Kaslo and Slocan Railway, extending from a point of junction with the Whitewater Creek Branch of the Nakusp and Slocan Railway at Retallack to Kaslo, in the Province of British Columbia, a distance of 17.7 miles, the control of which was secured by your Company with your approval under agreement with the Province of British Columbia in 1912.

10. With your approval the Directors in 1893 concluded an agreement for the leasing of the railway of the Nakusp and Slocan Railway Company at a rental of 40 per cent. of the gross earnings. Bonds of the Nakusp and Slocan Company to the amount of £132,960 were issued, guaranteed as to principal and interest by the Province of British Columbia and matured on July 1st, 1918. The rental paid by this Company has not been sufficient to pay the interest on the Bonds, and $321,698 has been advanced by the Province for this purpose up to December 31st, 1917. The lease of the railway of the Nakusp and Slocan Company will expire in 1920, and during its existence your Company has expended very substantial amounts in necessary betterments and improvements. In consequence of representations made by the Provincial Government your Directors have agreed to the purchase by the Company from the Government of Bonds of the Nakusp and Slocan Company to the above amount at the

[ADV.]

actual cost to the Province of acquiring them, but not exceeding their face value, upon conditions which involve the extinguishment of all claims of the Province against the railway. All the issuel capital stock of the Nakusp and Slocan Company is held by your Company, and the arrangement is, in the opinion of your Directors, warranted by the value of the railway as a traffic contributor to your Company's system.

11. Subject to your approval your Directors have concluded an agreement with the Grand Trunk Pacific Railway Company providing for the use by that Company of your Company's railway from a point east of Sutherland to a point west of Saskatoon, together with the use of your Company's passenger, express and freight facilities at Saskatoon station. The agreement is for a term of 21 years from the 2nd September, 1918, the rental payable by the Grand Trunk Pacific being based upon interest at the rate of 5 per cent. per annum on half the agreed capital account and the payment of maintenance expenses on a wheelage basis.

12. You will be asked to sanction the issue and sale of Consolidated Debenture Stock to defray the cost of construction of that portion of the Moose Jaw Southwesterly Branch from Mileage 35 to Mileage 66, to an amount not exceeding £6,000 per mile.

13. Your Directors are of the view that the construction of additional branch line mileage in the West will be necessary in the near future, and your authority will be asked for proceeding with the construction of the following lines when conditions warrant such construction, and for the issue and sale of a sufficient amount of Four per cent. Consolidated Debenture Stock to meet the expenditure, viz.:—

Empress to Milden Branch, 132 miles.
Empress to Acme Branch, 132 miles.
Vidora East Branch, 35 miles.
Russell North Branch, 15 miles.
Lanigan North Branch, 150 miles.

14. Subject to your approval your Directors have authorized expenditures on capital account during the present year of $4,482,000, apportioned to the following works, namely:—

Replacement and enlargement of structures in permanent form..	$545,000
Additional stations, roundhouses, freight sheds, ice houses and extensions to existing buildings	525,000
Additional terminal and side-track accommodation	400,000
Tie plates, rail anchors, and miscellaneous roadway improvements	1,017,000
Lining tunnels, British Columbia district	185,000
Automatic block-signal protection	112,000
Surveys for new lines and power possibilities	125,000
Miscellaneous improvements, and additions designed to improve the facilities of the Company and to effect operating economies	1,103,000
Improvements in connection with telegraph service	470,000

15. Your Company subscribed to $17,000,000 of the Second Victory Loan and was allotted $12,447,000 of its subscription. Included in this latter amount was $4,866,666 allotted in exchange for the surrender by the Company of £1,000,000 Dominion of Canada 3¾ per cent. Bonds maturing in 1919.

16. The gross earnings of your transportation system in the fiscal year exceeded those of any previous year in the history of the Company, and exceeded those of 1917 by $5,148,363, but the net earnings were less by $12,043,630. This large addition of $17,191,993 to the working expenses is principally due to the great advances in wages, though the increased cost of fuel and materials of every description also added a substantial amount to the year's expenses.

17. The Board of Railway Commissioners having amended in certain respects the general train and interlocking rules effective upon the lines of all railway companies subject to the jurisdiction of the Parliament of Canada, the appropriate changes in the existing By-laws of your Company will be submitted for your confirmation and approval.

18. The Right Honorable Lord Shaughnessy, K. C. V. O., who has been President of the Company for the past nineteen years, expressed his desire to retire from office in October last and his resignation was accepted with the deepest possible regret. During his tenure of office the Company has enjoyed extraordinary and uninterrupted prosperity and now stands among the foremost transportation companies in the world. Your Directors appreciate that this result has been due to Lord Shaughnessy's able and most devoted services which have earned the admiration of the community and the gratitude of the shareholders. Your Directors learned with gratification of Lord Shaughnessy's willingness to continue as Chairman of the Company, and that the benefit of his counsel and advice will not therefore be lost to the Company. Mr. E. W. Beatty was elected President of the Company.

19. You will be asked to approve verbal amendments to By-laws of the Company passed by your Directors and made necessary by the separation in the positions of Chairman of the Company and President.

20. In order to give his entire time to your Steamship interests, Mr. George M. Bosworth, who for twenty-two years has been in charge of the Company's freight traffic and for seventeen years Vice-President in charge of Traffic, resigned his office and will hereafter be exclusively identified with the Company's Steamship enterprises as Chairman of the Canadian Pacific Ocean Services Limited. Mr. W. R. MacInnes, formerly Freight Traffic Manager, was appointed Vice-President in charge of Traffic in succession to Mr. Bosworth.

21. Vice-President Sir George Bury, after a service of over thirty-five years during which he held many positions of increasing responsibility and importance and in all of which he showed energy and ability of a very high order, resigned from the Company's service in October. He at the same time retired from the Board and from the Executive Committee. Mr. Grant Hall, Vice-President of Western Lines, was elected Vice-President, a member of the Board of Directors and of the Executive Committee in succession to Sir George Bury.

22. The undermentioned Directors will retire from office at the approaching Annual Meeting. They are eligible for re-election:—

MR. RICHARD B. ANGUS,
SIR EDMUND B. OSLER,
SIR HERBERT S. HOLT,
BRIG.-GEN. FRANK S. MEIGHEN, C.M.G.

For the Directors,

E. W. BEATTY,
President.

MONTREAL, March 19th, 1919.

CANADIAN PACIFIC RAILWAY COMPANY GENERAL BALANCE SHEET, DECEMBER 31ST, 1918.

ASSETS

PROPERTY INVESTMENT:		
Steamers		$542,656,974.97
Railway, Rolling Stock Equipment and Lake and River		27,509,419.67
OCEAN AND COASTAL STEAMSHIPS, Exhibit "A"		
ACQUIRED SECURITIES (COST):		
Exhibit "B"		123,195,564.18
ADVANCES TO CONTROLLED PROPERTIES AND INSURANCE PREMIUMS		6,660,746.99
INVESTMENTS AND AVAILABLE RESOURCES:		
(Including amount held in trust for 6% Note Certificates, $57,131,199.06)		
Deferred Payments on Lands and Townsites	$60,704,530.48	
Imperial and Dominion Government Securities	30,682,057.44	
Provincial and Municipal Securities	2,031,721.29	
Debenture Stock loaned to Imperial Government	40,000,000.00	
Miscellaneous Investments, Exhibit "C," Cost	26,897,558.49	
Assets in Lands and Properties, Exhibit "D"	105,109,626.47	
Cash	13,482,364.53	
		278,907,858.70
WORKING ASSETS:		
Material and Supplies on Hand	$22,135,952.44	
Agents' and Conductors' Balances	4,040,562.96	
Net Traffic Balances	442,991.84	
Imperial, Dominion and United States Governments, Accounts due for Transportation, etc.	3,797,886.56	
Miscellaneous Accounts Receivable	6,377,139.05	
Cash in Hand	39,548,416.63	
		76,342,949.48
		$1,055,273,513.99

LIABILITIES

CAPITAL STOCK:		
Ordinary Stock	$260,000,000.00	
Four Per Cent. Preference Stock	80,681,921.12	
		$340,681,921.12
FOUR PER CENT. CONSOLIDATED DEBENTURE STOCK		216,284,882.10
MORTGAGE BONDS:		
Algoma Branch 1st Mortgage 5 per cent		3,650,000.00
NOTE CERTIFICATES 6 PER CENT.		52,000,000.00
CURRENT:		
Audited Vouchers	9,188,177.61	
Pay Rolls	5,216,537.81	
Miscellaneous Accounts Payable	8,960,573.10	
		23,365,288.52
ACCRUED:		
Rentals of Leased Lines and Coupons on Mortgage Bonds.		539,282.64
EQUIPMENT OBLIGATIONS		8,930,000.00
RESERVES AND APPROPRIATIONS:		
Equipment Replacement	3,959,931.83	
Steamship Replacement	18,649,395.98	
Reserve Fund for Contingencies and for Contingent War Taxes	21,929,788.37	
		44,539,116.18
PREMIUM ON ORDINARY CAPITAL STOCK SOLD		45,000,000.00
NET PROCEEDS LANDS AND TOWNSITES		84,079,684.88
SURPLUS REVENUE FROM OPERATION		127,275,369.58
SPECIAL RESERVE TO MEET TAXES IMPOSED BY DOMINION GOVERNMENT		2,203,621.21
SURPLUS IN OTHER ASSETS		106,724,347.76
		$1,055,273,513.99

J. LESLIE,
Comptroller.

AUDITORS' CERTIFICATE.

We have examined the Books and Records of the Canadian Pacific Railway Co. for the year ending December 31st., 1918, and having compared the annexed Balance Sheet and Income Account therewith, we certify that, in our opinion, the Balance Sheet is properly drawn up so as to show the true financial position of the Company at that date, and that the relative Income Account for the year is correct.

PRICE, WATERHOUSE & CO.,
Chartered Accountants (England).

Montreal, March 10th, 1919.

RECEIPTS AND EXPENDITURES.
YEAR ENDED DECEMBER 31ST, 1918.

Cash in hand, December 31st, 1917		$31,424,893.61
RECEIPTS:		
Surplus Revenue as per statement	$23,630,898.05	
Special Income as per statement	8,128,751.51	
		31,759,649.56
LAND DEPARTMENT:		
Lands and Townsites:		
Proceeds of Sales and Interest, less cancellations	14,376,745.01	
Less Sales Expenses and Irrigation	3,664,358.41	
	10,712,386.60	
Deferred Payments on previous year's sales	3,289,257.01	
	14,001,643.61	
Amount remaining in Deferred Payments on the sales of the year	8,167,588.96	
		5,834,054.65
Amount of repayment of Advances to Governments		12,960,100.00
Amount applied in reduction of Cost of Mining and other Properties, Exhibit "D"		25,449.46
		$82,004,147.28
DEDUCT:		
Agents' and Conductors' Balances	4,040,562.96	
Net Traffic Balances	442,991.84	
Imperial, Dominion and United States Governments	3,797,886.56	
Miscellaneous Accounts Receivable	6,377,139.05	
Advances to Controlled Properties and Insurance Premiums	6,660,746.99	
	21,319,327.40	
Amount at December 31st, 1917	20,648,558.74	
		670,768.66
		$81,333,378.62

EXPENDITURES:

Dividends on Preference Stock:		
2 per cent. paid April 1st, 1918.....	$1,613,638.42	
2 per cent. paid October 1st, 1918....	1,613,638.42	
		$3,227,276.84
Dividends on Ordinary Stock:		
2½ per cent. paid April 1st, 1918.....	6,500,000.00	
2½ per cent. paid June 29th, 1918....	6,500,000.00	
2½ per cent. paid October 1st, 1918..	6,500,000.00	
2½ per cent. paid December 31st, 1918.	6,500,000.00	
		26,000,000.00
Additions and Improvements, main line and branches, Exhibit "E"		2,903,019.08
Expenditures on leased and acquired lines, Exhibit "F"..		1,195,334.42
Shops and Machinery		48,058.23
Ocean and Coastal Steamships:		
Payments on Steamships acquired and under construction	7,236,659.52	
Less amount paid from Steamship Replacement	6,537,787.25	
		698,872.27
Deposited with Trustee, Special Investment Fund.....		6,015,630.98
SECURITIES ACQUIRED:		
Alberta Stock Yards Co. Stock.....	4,800.00	
Kingston & Ferbroke Ry. Stock.....	12.50	
Public Markets, Ltd., of Manitoba, Stock.	53,400.00	
Lake Erie & Northern Ry. 1st Mortgage Bonds	10,000.00	
Manitoba & North Western Ry. 1st Mortgage Bonds	425.83	
West Kootenay Power & Light Co., 1st Mortgage Bonds	35,283.33	
Trustee Securities	1,396,822.18	
		1,500,743.84
Payment on subscriptions to Government Loans.....		10,275,648.47
Payment of Equipment Obligations.....		1,100,000.00
Increase in Material and Supplies on hand.....		4,232,996.93
		57,197,581.06
DEDUCT INCREASE IN LIABILITIES:		
Current Laibilities	23,365,288.52	
Interest on Funded Debt.....	539,282.64	
Reserves and Appropriations.....	44,539,116.18	
	68,443,687.34	
Amount at December 31st, 1917.....	53,031,068.27	
		15,412,619.07
		41,784,961.99
Cash in hand		39,548,416.63
		$81,333,378.62

STATEMENT OF EARNINGS FOR THE YEAR ENDED DECEMBER 31st, 1918.

From Passengers	$30,837,253.89
" Freight	110,187,288.10
" Mails	1,354,570.91
" Sleeping Cars, Express, Telegraph and Miscellaneous	15,158,585.15
Total	$157,537,698.05

STATEMENT OF WORKING EXPENSES FOR THE YEAR ENDED DECEMBER 31st, 1918.

Transportation Expenses	$61,047,812.79
Maintenance of Way and Structures	22,646,105.94
Maintenance of Equipment	28,226,991.04
Traffic Expenses	3,011,578.67
Parlor and Sleeping Car Expenses	1,214,389.52
Expenses of Lake and River Steamers	1,181,589.41
General Expenses	5,421,601.38
Commercial Telegraph	285,241.63
Total	$123,035,310.38

DESCRIPTION OF FREIGHT FORWARDED.

	Years Ended December 31st 1916	1917	1918
Flour .....Barrels	11,119,890	13,727,970	13,301,740
Grain .....Bushels	256,106,690	213,340,507	137,070,428
Live Stock .....Head	2,172,437	2,190,596	2,364,870
Lumber .....Feet	3,017,964,134	3,178,554,667	3,241,312,802
Firewood .....Cord	289,471	295,277	339,631
Manufactured Articles, Tons	8,871,928	10,148,568	9,718,373
All other articles..Tons	8,847,785	8,788,423	9,798,523

FREIGHT TRAFFIC.

	Years Ended December 31st 1916	1917	1918
Number of tons carried	30,168,798	31,198,685	29,856,694
Number of tons carried one mile	14,931,739,090	14,882,991,224	13,014,665,922
Earnings per ton per mile	0.65 cents	0.70 cents	0.85 cents

PASSENGER TRAFFIC.

	Years Ended December 31st 1917	1918
Number of passengers carried	15,576,721	14,502,546
Number of passengers carried one mile	1,488,974,821	1,289,280,061
Earnings per passenger per mile	2.03 cents	2.39 cents

TRAIN TRAFFIC STATISTICS—FOR TWELVE MONTHS ENDED DECEMBER 31st, 1918 AND 1917

EARNINGS OF LAKE AND RIVER STEAMERS AND OF KETTLE VALLEY RAILWAY NOT INCLUDED IN THIS STATEMENT.

	Year ended December 31st, 1918.	Year ended December 31st, 1917.	Increase or *Decrease** Amount or number.	Per Cent.
TRAIN MILEAGE.				
Passenger trains.....	16,665,928	18,093,554	d 1,427,626	d7.89
Freight "	22,326,115	25,182,863	d 2,856,748	d11.34
Mixed "	1,966,362	2,056,414	d 90,052	d4.38
Total trains	40,958,405	45,332,831	d 4,374,426	d9.65
CAR MILEAGE.				
PASSENGER.				
Coaches and P. D. and S. cars.....	82,747,310	93,745,444	d 10,998,134	d11.73
Combination cars..	2,366,268	2,769,677	d 403,409	d14.57
Baggage, Mail and Express cars	40,903,961	43,327,370	d 2,423,409	d5.59
Total Passenger cars	126,017,539	139,842,491	d 13,824,952	d9.89
FREIGHT.				
Loaded	539,157,440	617,479,662	d 78,322,222	d12.68
Empty	199,157,368	245,513,721	d 46,356,353	d18.88
Caboose	25,343,851	28,211,955	d 2,868,104	d10.17
Total Freight cars.	763,658,659	891,205,338	d 127,546,679	d14.31
Passenger cars per Traffic Train Mile.....	6.76	6.94	d.18	d2.59
Freight cars per Traffic Train Mile	31.44	32.72	d 1.28	d3.91
FREIGHT TRAFFIC.				
Tons of revenue freight carried one mile	12,885,684,625	14,677,957,266	d1,792,272,641	d12.21
Tons non-rev. freight carried one mile...	1,423,459,482	1,496,188,006	d72,728,524	d4.86
Total tons (all classes) freight carried one mile	14,309,144,107	16,174,145,272	d1,865,001,165	d11.53
Tons of revenue freight carried one mile per mile of road	991,680	1,129,908	d138,228	d12.23
Tons of non-rev. freight carried one mile per mile of road.....	109,549	115,176	d5,627	d4.89
Total tons (all classes) freight carried one mile per mile of road	1,101,229	1,245,084	d143,855	d11.55
Average amount received per ton per mile of revenue freight .....cts.	0.847	0.698	0.149	21.35
Average No. of tons of revenue freight per train mile.....	530.44	538.85	d8.41	d1.56
Average No. of tons of non-rev. freight per train mile.....	58.60	54.93	3.67	6.68
Average No. of tons of (all classes) freight per train mile	589.04	593.78	d4.74	d.80
Average No. of tons of revenue freight per loaded car mile	23.90	23.77	.13	.55
Average No. of tons of non-rev. freight per loaded car mile.	2.64	2.42	.22	9.09
Average No. of tons of (all classes) freight per loaded car mile	26.54	26.19	.35	1.34
Freight train earnings per loaded car mile .....cts.	20.24	16.59	3.65	22.00
Freight train earnings per train mile. dollars	4.49	3.76	.73	19.41
Freight train earnings per mile of road .....dollars	8,398.25	7,885.40	512.85	6.50
PASSENGER TRAFFIC.				
Passengers carried (earning revenue)	14,396,753	15,462,276	d 1,065,523	d6.89
Passengers carried (earning revenue) one mile	1,280,533,734	1,480,023,872	d 199,490,138	d13.48
Passengers carried (earning revenue) one mile, per mile of road	98,550	113,932	d 15,382	d13.50
Average journey per passenger .....miles	88.95	95.72	d 6.77	d7.07
Average amount received per passenger .....dollars	2.12	1.93	.19	9.84
Average amount received per passenger mile .....cts.	2.38	2.02	.36	17.82
Average number of passengers per train mile	68.73	73.45	d4.72	d6.43
Average number of passengers per mile...	15.04	15.33	d.29	d1.89
Revenue from passengers per passenger car mile....cts.	35.81	30.98	4.83	15.59
Total passenger train earnings per train mile	2.15	1.92	.23	11.98
Total passenger train earnings per mile of road ....dollars	3,078.88	2,973.92	104.96	3.53

* d Indicates decrease.

Railway Officers

Railroad Administration

Central

C. F. Stewart has been appointed manager of the Troop Movement Section, with office at Washington, succeeding **George Hodges,** deceased. Mr. Stewart has been an assistant to Mr. Hodges in charge of passenger routing. He was formerly general passenger agent of the Western Maryland.

Regional

H. M. Adams, manager of inland traffic, Division of Traffic, has been appointed traffic assistant to **B. F. Bush,** regional director of the Southwestern region, to succeed **W. B. Biddle,** who has been assigned to other duties.

Federal and General Managers

W. L. Mapother, federal manager of the Louisville & Nashville and associated roads, with headquarters at Louisville, Ky., has had his authority extended over the Cumberland Railroad (Artemus, Ky., to Anchor, Ky.).

F. P. Pettibone, federal manager at Dallas, Texas, has had his jurisdiction extended over the Beaumont Sour Lake & Western, the Houston Belt & Terminal, the Iberia, St. Mary's & Eastern, the new Iberia & Northern, the New Orleans, Texas & Mexico, the Orange & Northwestern, and the St. Louis, Brownsville & Mexico. These roads have been released from the jurisdiction of **W. B. Scott,** federal manager at Houston, Texas.

W. E. Williams, whose appointment as general manager of the Missouri, Kansas & Texas (exclusive of the Trinity branch, Beaumont & Great Northern and lines west of Whitesboro, Texas), the Union Terminal of Dallas and the Houston & Texas Central, with headquarters at Dallas, was announced in the *Railway Age* of February 28, was born at Houston, Texas, May 29, 1864. He began railway work in 1881 with the International & Great Northern as clerk to the roadmaster, and was subsequently in the bridge department, clerk in the superintendent's office, time keeper, transportation clerk, chief clerk to the superintendent of transportation, to the general superintendent and to the general manager, and secretary to the receivers, until June, 1895. Mr. Williams was then appointed purchasing agent and general storekeeper, in which position he continued for two years. He entered the employ of the Missouri, Kansas & Texas in September, 1897, as chief clerk to the general superintendent, and was consecutively car accountant and trainmaster. In November, 1902, he was promoted to superintendent at Greenville, Tex., and from December, 1905, to October, 1911, he was successively superintendent at Denison, Tex., McAlester, Okla., and Sedalia, Mo. He was then appointed general superintendent, which position he held until his recent appointment as general manager.

W. E. Williams

Operating

W. B. Veazey, treasurer and general manager of the Gainesville Midland, has been appointed superintendent, in charge of operation and traffic, with office at Gainesville, Ga.

W. A. Gore, superintendent of the Norfolk & Portsmouth Belt Line, with office at Portsmouth, Va., has been appointed superintendent of the Norfolk division of the Virginian Railroad, vice **B. E. Nevins,** transferred.

F. C. Smith has been appointed assistant superintendent of the Salt Lake division of the Southern Pacific, lines south of Ashland, with headquarters at Ogden, Utah, vice **H. W. Wistner,** who has been transferred to Sparks, Nev., vice **J. T. Bell,** assigned to other duties.

L. C. Sauerhammer, superintendent, office organization on the Baltimore & Ohio, at Baltimore, Md., has been appointed assistant to federal manager of the Baltimore & Ohio, Eastern Lines; the Coal & Coke; the Morgantown & Kingwood; the Western Maryland; the Cumberland & Pennsylvania; the Cumberland Valley, and the Wheeling Terminal Railroad, with office at Baltimore, vice **E. E. Hamilton,** resigned.

J. Cannon, general superintendent of the Eastern district of the Missouri Pacific, with headquarters at St. Louis, Mo., has been appointed general superintendent of transportation of the same road and the Memphis, Dallas & Gulf, the Natchez & Southern, and the Arkansas Central, with headquarters at St. Louis, succeeding **J. A. Somerville,** resigned to go to another road. **C. B. Wildman,** superintendent of the Eastern division of the Missouri Pacific at Jefferson City, succeeds Mr. Cannon, with headquarters at St. Louis; **W. E. Merrifield,** superintendent of the Omaha division, at Falls City, Neb., succeeds Mr. Wildman; **L. A. David,** superintendent of the Southern Kansas division at Coffeyville, Kan., succeeds Mr. Merrifield, and **Phil Carrol** has been appointed superintendent of the Southern Kansas division, with headquarters at Coffeyville, to succeed Mr. David.

J. W. Deneen, superintendent of the Cumberland division of the Baltimore & Ohio, with office at Cumberland, Md., has had his authority extended over the Keyser division, which has been consolidated with the Cumberland division, and the new division is now known as the Cumberland division. **C. B. Gorsuch,** relief superintendent, has been appointed superintendent of the Pittsburgh division, with headquarters at Pittsburgh, Pa.; **T. J. Brady,** superintendent of the Keyser division, has been appointed superintendent of the Connellsville division, with headquarters at Connellsville, Pa., vice H. R. Hanlin, transferred, and **J. D. Beltz,** acting superintendent of the Pittsburgh division, has been appointed assistant superintendent of the same division, with office at Pittsburgh, Pa., vice **C. P. Angel,** transferred.

Financial, Legal and Accounting

H. H. Dean, general counsel of the Gainesville Midland, has been appointed general solicitor; **G. H. Purvis,** auditor, has been appointed federal auditor, and **W. E. McKinney** has been appointed acting federal treasurer; all with offices at Gainesville, Ga.

R. G. Shorter has been appointed auditor of the Carolina, Clinchfield & Ohio; the Carolina, Clinchfield & Ohio of South Carolina, and the Black Mountain Railroad, vice **J. M. Featherston,** transferred to other duties; **G. A. Masengill** has been appointed auditor of revenue, and **L. J. Hopper** has been appointed auditor of disbursements, vice R. G. Shorter; all with offices at Johnson City, Tenn.

Traffic

W. C. Staley has been appointed supervisor of oil traffic of the Southwestern region, with headquarters at Kansas City, Mo., to succeed **B. L. Swearingen,** who has resigned.

W. J. Mullin, general freight and passenger agent of the Delaware & Hudson, has been appointed traffic manager of that road and the Greenwich & Johnsonville; the Wilkes-Barre Connecting; the Schoharie Valley; the Lake Champlain Steamboat Line, and the Lake George Steamboat Line, with headquarters at Albany, N. Y.

John S. Hershey, whose appointment as freight traffic manager of all roads under the authority of **F. G. Pettibone,** federal manager in the Southwestern region, with headquarters at Dallas, Tex., as announced in the *Railway Age*

of March 7, page 554, was born at Nebraska City, Neb., on June 30, 1868 and received his education in the public schools at Nebraska City. Mr. Hershey entered railway service on August 21, 1890 as a clerk in the local freight depot of the Chicago, Burlington & Quincy at Chicago, remaining in that position until 1893 when he became a clerk in the auditing department of the Elgin, Joliet & Eastern. The next year he was employed as rate clerk in the general freight department of the same road and from 1896 to 1902 he served in the office of the freight traffic manager of the Atchison, Topeka & Santa Fe at Chicago. From January, 1902, to June of the same year he was general freight and passenger agent of the Gulf, Beaumont & Kansas City and the following two years he was in the employ of the Gulf, Colorado & Santa Fe as assistant general freight agent until his appointment as general freight agent of the same road, and in addition the Texas Midland and the Houston Belt and Terminal, in which capacity he remained until his recent appointment as noted above.

Engineering and Rolling Stock

A. A. Schenck, engineer of maintenance on the western lines of the Chicago & North Western, with headquarters at Omaha, Neb., has been appointed assistant to the chief engineer, with jurisdiction over lines west of the Missouri river, with offices at Omaha. **A. K. Gault** has been appointed division engineer of the Eastern division of the western lines of the Chicago & North Western and the Missouri Valley & Blair Bridge, with headquarters at Omaha, Neb. **W. T. Main** has been appointed division engineer of the Black Hills division of the Chicago & North Western and the Wyoming & North Western, with headquarters at Chadron, Neb.

Walter Shepard, consulting engineer of the Boston & Albany, with headquarters at Boston, Mass., retired under the pension rules on March 1, after 44 years of continuous service in the engineering department of that road. He was born on March 1, 1849, at Dorchester, Mass., and was educated in the Dorchester grammar and high schools, Boston Latin School, and in 1870 graduated from Harvard University. In 1872 he graduated from the Massachusetts Institute of Technology, and in June of the same year began railway work with the Boston & Albany as an engineer's assistant. He was then out of railway work until March, 1875, when he returned to the service of the Boston & Albany. In April, 1882, he was promoted to division engineer and was made assistant chief engineer in December, 1886. He served as chief engineer from November, 1891, until May, 1908, and since that time as consulting engineer of the same road.

W. Shepard

Orlando H. Frick, whose appointment as district engineer of the Middle district of the Chicago, Milwaukee & St. Paul, with headquarters at Milwaukee, Wis., was announced in the *Railway Age* of March 14 (page 619), was born at Manitowoc, Wis., on September 25, 1879, and graduated from the University of Wisconsin in 1902. Mr. Frick began his railway career in the same year as a levelman with the Louisville & Nashville, and after a short time he entered the employ of the Chicago, Rock Island & Pacific as assistant engineer, in which capacity he served until early in 1904 when he was appointed resident engineer of the Missouri, Oklahoma & Gulf, in which position he remained until September of the same year. The following two months he served as resident engineer on the Appalachicola Northern and then entered the employment of the Chicago, Milwaukee & St. Paul, with which road he has served consecutively until his recent appointment as assistant engineer for ten years, pilot engineer and field engineer on valuation.

Corporate

Operating

W. Culligan has been appointed chief despatcher on the twentieth and twenty-first districts of the Grand Trunk, with office at Stratford, Ont.

Executive, Financial, Legal and Accounting

G. W. Muller has been appointed transfer agent and assistant secretary of the Kansas City Southern, with headquarters at New York, succeeding **D. W. Leitch,** who has resigned.

William H. Williams, chairman of the board of the Wabash Railway Company, with headquarters at New York, has been elected also president to succeed Edward F. Kearney, deceased. A portrait of Mr. Williams and comments on his career were published in the *Railway Age Gazette* of December 10, 1915, page 1092.

Traffic

R. F. Clark, general agent of the Canadian Northern, with office at Chicago, has been appointed general agent of the Canadian National Railways, with office at Chicago, and **J. A. Boak,** western United States agent of the Canadian National Railways, with headquarters at Chicago, has resigned. **D. O. Wood** has been appointed traffic manager of the export and import department, with office at Toronto, Ont.

Engineering and Rolling Stock

M. K. Barnum, assistant to general superintendent maintenance of equipment of the Baltimore & Ohio, with office at Baltimore, Md., has been appointed mechanical engineer for the corporation.

C. S. Ogilvie has been appointed assistant engineer of the Grand Trunk, with headquarters at Ottawa, Ont., vice **H. Mowat,** assigned to other duties. Mr. Ogilvie was formerly assistant engineer of the Grand Trunk, at Belleville, but went overseas with the first contingent of the Canadian Expeditionary Force in the 13th Royal Highlanders. He was a prisoner in Germany for more than three years, being released after the signing of the armistice.

Harold R. Miles, assistant engineer on the Canadian Pacific, with headquarters at Montreal, Que., has been promoted to division engineer with headquarters at Winnipeg, Man. He was born at Lethbridge, Alberta, on March 14, 1879, and entered railway service in March, 1899, with the Washington County Railway Company in the state of Maine. The following year he was employed by the Algoma Central on location work, and in 1901 he entered the service of the Canadian Pacific as assistant engineer of maintenance, with headquarters at North Bay, Ont. Later he was appointed resident engineer of maintenance on the Lake Superior division, in which capacity he served until July 1, 1915, when he was transferred to Montreal, Que., as assistant engineer which position he held until his appointment as division engineer, with headquarters at Lethbridge. Mr. Miles succeeds **H. K. Yorston,** who has been appointed locating engineer of the Canadian Pacific, Western Lines.

Obituary

Edward Lawless, master mechanic of the Illinois Central, with office at Freeport, Ill., died at his home in that city on March 9, at the age of 51.

Allen T. Fraser, chief engineer of the Canadian National Railways, Western lines, with office at Winnipeg, Man., was killed by a snow slide near Mount Robinson, in the Yellowhead Pass, on March 31.